COMPUTERWORLD

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NEWSPAPER

Third-Party Lessee Left System-less

• Lack of Financing Keeps 370/158 Idle

By Ronald A. Frank
Of the CW Staff

NEW YORK – A large company here took delivery of its new IBM 370/158 last week only to find it could not afford to install the system. The machine is still sitting on the loading dock until the user can figure out what to do.

The idle 158 is a victim of tight money that is beginning to affect many users, especially those who hope to arrange third-party leases.

When the company first ordered its 158 it hedged its bets. It budgeted $29,000/mo for the IBM system compared with the monthly lease cost from IBM of $40,000/mo. And it expected to pick up a $12,000- to $15,000/mo savings by arranging to have a third party finance the system.

As a result of the tight money situation, the best the company can get at present is a third-party deal at $33,000/mo, and that kind of money is not in the budget.

The company has been frantically looking around in the money markets trying to make a deal, but computer leasing investments do not have high priority with those investors who do have money, according to one leasing expert.

"The interest fluctuations are too unstable," he explained, "and investors don't want to pick up paper for an eight-year full-payout lease. Too much can happen to interest rates in that time."

Not Alone

Among those who are frantic is the IBM account salesman. In order to avoid losing the sale and its commission, he has been seeking out money sources almost as actively as the customer.

In this type of situation, IBM is very precise. Asked if it is permissible for a salesman to help a customer line up financing with a third-party leasing company, an IBM spokesman said, "This is prohibited."

Meanwhile, what happens to the 158 and when does it officially go on rental? According to IBM, the customer does not begin paying the vendor until the machine has been installed, checked out and accepted by the user. But obviously neither the customer nor IBM wants to keep a machine sitting idle for an indefinite period.

But is this tight money situation beneficial to IBM? Some say yes. These leasing spokesmen reason that last January when third-party leases were still 55% of IBM rental, a lease was a good deal. But today with high interest the lease rates are edging up to 68% or even 70% of IBM rental.

And as the differential between IBM rates and the third-party lessors decreases, users eventually get to a point where it is no longer worth the effort to avoid a straight IBM deal. In this environment IBM makes more term lease plan contracts on its mainframes, these spokesmen claim.

On the other side, there are those who believe the prohibitive rates of money will forestall the acquisition of new systems by users. The logic here is that customers will attempt to prolong the life of their existing 360s (or other machines) until the cost of money comes down.

But all this speculation does little to help the user who has a 370 about to be delivered. And it is no secret that many of the large leasing companies are also hurt by the money crunch. Many of them are tied to large investment sources and when the funds dry up they have as hard a time getting money as everyone else. Among the major leasing companies, Itel relies on General Electric Credit Corp. for

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NEWS IN BRIEF

IBM Buys Comsat Arm; Enters Carrier Area

ARMONK, N.Y. – IBM has decided to buy its way into the domestic satellite arena and it may soon have a regulated common carrier subsidiary if the FCC approves.

The proposed joint venture satellite firm would be formed from the present one-third interest now held in CML Satellite Corp. by each Lockheed and MCI. Comsat General presently owns the remaining one-third interest in CML and it will become a partner in the new company.

IBM and Comsat General will pay MCI and Lockheed $5 million for their shares in CML, with IBM accounting for $3.2 million of the total.

The new firm, which is expected to get a new name, will be 55%-owned by IBM through a wholly owned common carrier subsidiary, and 45%-owned by Comsat General, which is a subsidiary of Comsat.

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FBI Prohibits CCH Access From Police Car Terminals

WASHINGTON, D.C. – The Advisory Policy Board of the FBI's National Crime Information Center (NCIC) has voted to deny policemen with terminals in their cars access to NCIC's Computerized Criminal History (CCH) files. The measure takes effect immediately.

Norman Stultz, an FBI spokesman, explained the board's vote as a measure for assuring this sensitive criminal data doesn't reach unauthorized persons.

"When you're communicating by land lines there is control over transmission. But when you're communicating from an omnidirectional antenna you're putting information up for grabs for anybody to intercept," he said.

The move in no way prevents policemen in cars from getting data from other NCIC files: wanted persons, stolen vehicles and other stolen materials.

CCH can still be queried from the stationhouse or by telephone, Stultz explained.

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IBM Asks Suit Dismissal If Commerce Data Withheld

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK – IBM has asked the U.S. District Court here to dismiss the government antitrust charges against it if the government continues to withhold documents IBM alleges are necessary for its defense.

At issue are "tens of thousands" of documents that have been withheld from IBM by the Department of Commerce on the grounds that their disclosure would not be in the "national interest."

This refusal "has greatly prejudiced IBM in its defense of this lawsuit," IBM motions said last week, adding "IBM has been irreparably damaged in the preparation of its defense" by the Commerce Department actions.

IBM asked Chief Judge David Edelstein, who is hearing the case, to hold the government in contempt for its refusal to produce the documents in question and to dismiss the charges in their entirety if the government "should persist in its contempt" by not submitting the documents within 30 days.

Alternatively, IBM said it would allow the government to stipulate certain facts IBM believes are in the requested documents – but those stipulations as outlined by IBM would virtually destroy the government's entire case.

The IBM filing noted that Edelstein had entered two orders in 1973 requiring the government to produce all documents in its possession relating to data processing at the request of IBM and with the consent of the Department of Justice.

However, the Department of Commerce "has refused to produce the required documents" or even "to list the documents withheld, and to this day has consciously and deliberately refused to comply" with the court orders, the IBM motion said.

Delaying Tactics

Calling the tactics of the Department of Commerce "dilatory and pointless," IBM accused the department not only of delaying production of needed documents, but also of delaying answering IBM correspondence on the matter.

Furthermore, IBM charged Secretary of Commerce Frederick Dent unilaterally decided not to release the documents on the "novel" claim that it was "up to him rather than this court to determine what documents [Commerce] would deign to produce in response" to the orders of the court.

According to IBM, the following categories of documents have been withheld:

- "Export license applications, including supporting documents and papers and export licenses.
- "Technical reviews of various commodities being considered for export licenses.
- "Investigative files maintained for the purpose of enforcing the provisions of the Export Administration Act and its predecessor, the Export Control Act.
- "The Industrial Evaluation Board

(Continued on Page 4)

Afips Sets 3 Programmer Classifications

By Edith Holmes
Of the CW Staff

MONTVALE, N.J. – A long-awaited analysis of what computer programmers are and do is contained in a study soon to be released by the American Federation of Information Processing Societies (Afips).

The culmination of discussions begun in the late '60s, the Afips report attempts to establish job standards for business, systems and scientific programmers.

"Computer Programmer Job Analysis" was motivated by a growing interest in the certification of programmers and the possible need to license these and other computer-related workers.

Dr. Raymond M. Berger of Psychometrics, Inc. and the University of Southern California was asked by Afips in September 1970 to carry out the studies planned by the organization's Certification Committee. He expects the job descriptions and recommendations for certification programs and testing to be used by management personnel of computer programming organizations.

"We hope these managers will use the results of the study to develop programmer position descriptions to fit their specific needs," he said.

Not only should the report serve to set minimum job standards for programmers in all three fields, but Berger and the Afips committee contend their findings should be made available to training directors, curriculum committees and others responsible for programming training.

The establishment of a data bank containing material gathered during the study and updated on a regular basis, the initiation of a program to set job standards, and the use of the job analysis to construct qualifying examinations for programmers complete the report's suggestions for additional work in this area.

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CIA Seeks Breakup of AT&T Monopoly

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – AT&T should be required to break up its "telecommunication monopoly" and the Federal Communications Commission (FCC) should be divided into two agencies, the Computer Industry Association proclaimed here last week.

In testimony before the Senate Subcommittee on Antitrust and Monopoly, CIA representative Jack Biddle said AT&T should be placed under the Public Utility and Holding Company Act which currently applies to gas and electric firms. The act would require that Bell be split into 24 local operating companies; a long lines company; and one or more terminal equipment, switchgear, wire and cable, and supply companies.

The CIA testimony was included with that of other industry spokesmen, most of whom objected to the ways in which AT&T attempts to thwart pressure from noncarrier suppliers.

One scheduled witness had been Thomas E. Kauper, assistant attorney general in the Antitrust Division of the Justice Department. But Kauper's appearance was postponed indefinitely and some Washington legal experts speculated the Justice Department might be on the verge of launching an antitrust suit against AT&T.

AT&T's monopoly has made it slow to innovate and its position is now being used "to undercut new competition," especially in the computer terminal area, the CIA charged.

"AT&T's Teletype subsidiary used its ties and a cross-subsidization from telephone users to undercut competitors, including IBM, by 50% in price.

"Clearly, AT&T, with a captive market for its Teletype and no meaningful competition, had little incentive to effect significant product improvements over a period of more than 30 years. In the late 1960s, the computer industry recognized that Teletype equipment simply could not effectively fulfill the requirements of the modern data processing function.

"A subindustry, the terminal and low-speed printer segment, was born . . . Computer applications that had not previously been feasible proliferated – costs dropped and user choice increased significantly – and the sleeping giant awoke," the CIA stated.

In asking for a division of the FCC's operations, Biddle said there should be one agency to regulate broadcasting and another to regulate telecommunications.

Calling the commission and its staff "dedicated to the public interest," Biddle said "the resources of the commission in the current Phase II [AT&T] rate proceedings are woefully inadequate by comparison to those of AT&T. As a consequence, [the FCC is] overly dependent on AT&T for the necessary economic studies, cost data and factual information.

"Combine this with the cloak of secrecy that is being maintained over the evidentiary material that is crucial to a valid determination of facts and issues, and it is little wonder that America is losing faith in its judicial system and its regulatory agencies," he added.

Another appeal for different AT&T competitive ground rules was voiced by Theodore F. Carver, director of trade regulations for Litton Industries, Inc. Carver called for:

- A five-year phaseout of Western Electric from the manufacture of telephone terminal equipment.
- Making separate corporations out of each Bell System operating company.
- Deregulating the sale and lease of telephone terminal equipment.
- Giving the FCC exclusive jurisdiction for protecting the phone network from harm.

AT&T witnesses are scheduled to appear before the subcommittee later this month. In addition, the subcommittee plans to begin hearings on the computer industry on July 23, according to a spokesman in the office of Sen. Philip A. Hart (D-Mich.) who is chairman of the body.

Afips Defines 3 Programmer Categories

(Continued from Page 1)

In defining the business programmer's job, both working programmers and computer experts recognized a growing responsibility for performing analyses as the programmer gains experience and is promoted to higher job classifications, according to the report. When a business programmer investigates a problem, he is more likely to study documents, interact with the customer and determine data file and report requirements than observe and experiment with the system directly.

The report claimed program modification is still considered the most universally important design task. But the business programmer must also be able to develop new programs as well as design changes into existing ones.

"As with analysis, the responsibility for design grows with seniority and experience, but even relatively junior programmers must assume a fair amount of responsibility for program design," the study added.

Coding and debugging in all their aspects continue to require the attention of the business programmer, the report said. While these areas tend to take precedence over program testing, conducting tests without formally documenting them occupies part of the business programmer's time.

This brand of programmer is more likely to establish, use and enforce data standards for a practical application than to work with systems programmers to develop standards within the programming system or provide standard subroutines for a library, the study concluded.

Finally, programmers in business tend to maintain their own technical proficiency and to help guide colleagues in this area, before they will assume a similar responsibility in the profession as a whole by writing journal articles or teaching courses.

Emphasis on Analysis

The job of systems programmer involves a greater emphasis on analysis, according to the Afips study. Analysis generally focuses on the "immediate problems of existing system programs," the report added.

"In the design area, systems programmers recognize the importance of the task, but assign little importance to programming methodologies," the report continued. Similarly, the maintenance of existing languages and programs is more important to the systems job than coding new, formally specified languages.

Assembly and machine language programming constitute a greater part of the job in systems programming than they do in business and scientific programming, according to the study. But simulated environments and benchmark testing are deemphasized in all programming areas.

"One might expect systems programmers to be the guardians of standards for programming, but the data do not bear out this expectation," the report noted. "Systems programmers provide flexible, general-purpose routines; they do not place restrictions on other programmers in an extensive fashion."

Little Instruction

Like the business programmer, the systems professional is concerned with his proficiency in the field and with the training of others. By contrast, the report noted, the scientific programmer spends less effort instructing others, though he does maintain individual professional competence.

In general, the scientific and engineering programmer becomes more involved with modifying or converting existing programs to extend their capabilities or applying existing techniques to new problems than he does creating completely new solutions and techniques.

The report added the design of programs receives very high attention from scientific programmers in all its aspects, although those in higher job classifications place less stress on particular methodologies than do more junior people.

"Assembly language encoding is only moderately emphasized," the study indicated. "Most programming is done in a higher level language." As in business programming, "special-purpose, one-shot debugging routines are not widely used."

While the testing of scientific or engineering programs still demands a significant amount of the programmer's time, the report said, testing receives less overall attention than does design or coding. Both documentation and communication of test results are "definitely deemphasized."

Now that the study has been completed, Berger and the Afips committee hope some recognized association in the programming field will assume the reponsibility for creating and implementing certification and standards programs.

The 'Ideal,' the 'Real' Combined

MONTVALE, N.J. – In conducting the computer programmer job analysis study, the Afips Certification Committee and Dr. Raymond M. Berger of Psychometrics, Inc. tried to determine what programmers should be able to do, what they might be capable of doing and what they do in actual practice.

Three areas of programming were defined: business, systems, and scientific and engineering. According to Berger, these divisions were considered to be the smallest number of integral divisions in the programming field.

For each programming area, a set of tasks and skills was developed, reviewed and revised by a West Coast panel of programming experts. Berger said these lists were then submitted to an East Coast panel, and the Delphi method was used to reach a consensus of experts on each aspect of a programmer's job.

This consensus of tasks and skills constituted the "ideal" job description.

Finally, the ideal list was sent to 684 programmers selected from a representative sample of organizations in a national survey. Each participant rated the tasks and skills listed according to their importance in his particular job, Berger said. These results represented the "as-practiced" job description.

A universal set of job descriptions for business, systems and scientific and engineering programmers resulted from the integration of the "ideal" and "as-practiced" definitions.

Berger commented that in each case, the assumption was made "that the programmer, given certain personal and job qualifications, could become recognized as a professional outside his industry in the same sense as a doctor, lawyer or CPA."

Top Brokerage Executives Testify

Securities Losses May Force Centralized System

By Toni Wiseman
Of the CW Staff

WASHINGTON, D.C. – Increased securities losses – which could run as high as $50 billion yearly – should be the prime mover in setting up a centralized computer system in the securities industry, representatives of major stock brokerage firms testified here recently.

In their testimony before a Senate subcommittee, both William J. Fitzpatrick, general partner and house counsel of Loeb, Rhoades & Co., and Roger E. Birk, president of Merrill Lynch, Pierce, Fenner & Smith, Inc., asserted the need for steps to be taken to curb trading in stolen securities.

Both executives called for the establishment of a central securities-validation system to which all brokers, banks, transfer agents or any financial institutions who retain custody of securities must report any stolen or missing security numbers.

'Participation Mandatory'

"There is no practical alternative to a central validation and reporting system," Birk affirmed. The exact structure and jurisdiction is unimportant, he maintained, stating the central agency could be the Federal Deposit Insurance Corporation or an independent corporation, but "participation must be mandatory."

Merrill Lynch, Pierce, Fenner & Smith has developed a real-time on-line system to monitor securities movements within the firm's working areas, Birk stated, but the system still is not thief-proof, since "no system is completely fail-safe."

Speaking for Loeb, Rhoades & Co., Fitzpatrick noted that "as a matter of firm policy all bearer instruments which are delivered into our firm as well as any questionable registered security" are submitted to a private computerized data system, so that the certificate numbers can be checked with that data bank of stolen or missing securities.

Merrill Lynch, Pierce, Fenner & Smith subscribes to the same service, offered by Securities Validation Corp. (SVC), a subsidiary of Sci-Tek, Inc. of Wilmington, Del.

There are in excess of 800,000 certificates, with an estimated value of more than $11 billion, listed in the SVC data bank, SVC Chairman of the Board Henry E.I. du Pont said, estimating that the dollar value of lost, missing and stolen government, state, municipal and corporate securities could be as high as $50 billion.

Du Pont stated that banks have shown great reluctance to subscribe to the SVC service in spite of the rising cost of security losses. Only 18 banks have joined the system since its inception in 1971, he said.

Data Base Doubled

"Although the system's inquiry usage has declined during the past year, the fact that the data base has doubled in content resulted in the detection of fraudulent securities transactions at a much greater rate than in the previous two years," du Pont said, adding that this gives some indication of the safeguards that 100% participation in a centralized program could provide.

NCIC Access

Du Pont referred to a statement made April 19 by John Lee, executive vice-president of the New York Clearing House, in which Lee said banks have access to the FBI's National Crime Information Center (NCIC). "It's a good data base and we get the information quickly," Lee added.

"The Sci-Tek computer simply isn't adequate," Lee said. "For instance, the bank out in Podunk has some securities stolen; it's not going to report to Sci-Tek. Without information from all these banks, the Sci-Tek computer is a snare and a delusion."

More Data

Du Pont alleged, however, that information is more quickly and easily obtainable via SVC than NCIC and that the information contained on the SVC data base is estimated at approximately five to six times greater in volume than that stored on the NCIC system.

The solution to the securities problem, Birk proposed, is to "treat the malady not the symptom" by doing away with certificates and physical transfer and simply crediting the appropriate broker by computer entry.

"Many brokers are already doing this," he said, "and that is a giant step forward."

Explosion, Fire Destroy Computer, Damage Data Center

SANTA ANA, Calif. – A service bureau run by Computeristics, Inc. was back in operation by June 28 after an explosion and fire destroyed the computer and damaged the peripheral equipment and some data files on June 23.

Operating tapes and backup files had been stored apart from the IBM 360/40 and were undamaged, according to a Computeristics spokesman.

The company implemented a preestablished disaster plan by flying another 360/40 and other replacement equipment to Santa Ana from its 12 data centers located throughout the U.S.

The approximately 50 customers served by the Computeristics bureau received uninterrrupted service, the spokesman said. Commented a representative for Datum, Inc., "Even with a major disaster, Computeristics maintained complete service to all its customers, and I was impressed that a main system could be put back in operation within five days."

While Computeristics would venture no estimates of damage, the company spokesman claimed West Coast papers were "grossly inaccurate" in their reports of a $2 million loss.

Who hit the center and why form the basis of a police investigation currently under way. A spokesman for the Santa Ana Police Department said he thought the fire began when gasoline poured over the equipment exploded.

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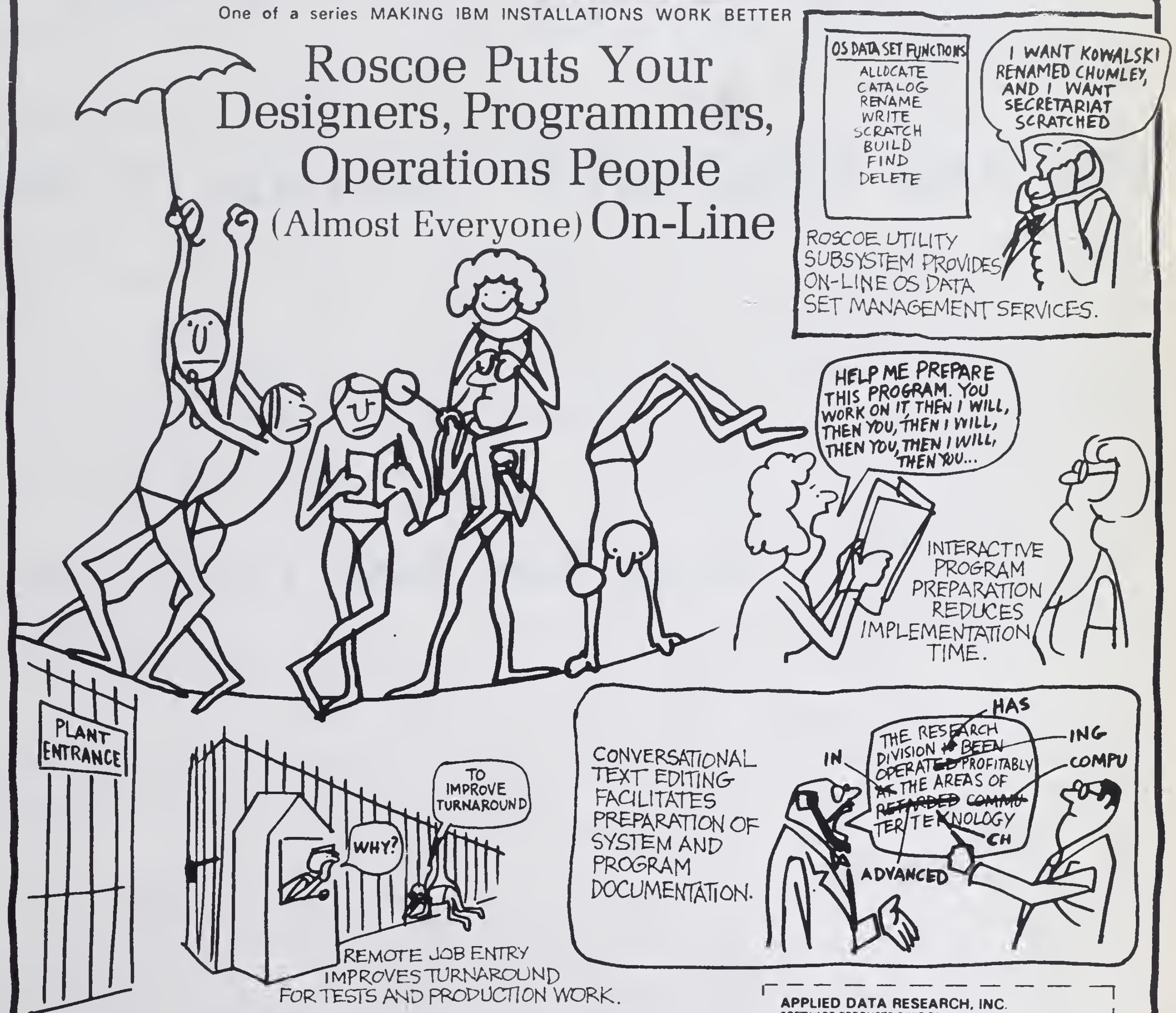
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Saves $250,000

This User Couldn't Be Happier With Third-Party Deal

By Naney French
Of the CW Staff

MINNEAPOLIS – "Doing business with a third-party lessor is good business because, unlike the big manufacturers' 'here's the deal, take it or leave it attitude,' the third party will negotiate and save you big money over the long term

"And with unbundling, you don't lose any systems engineering support when you bypass the manufacturers," said Bill McArthur, management information systems manager for MTS Systems Corp. here.

"We expect the IBM 360/40, ours on a five-year lease from Itel, to save us more than a quarter of a million dollars – and that's a conservative estimate," he claimed.

Addressing a session on managing a small- to medium-size data processing department at DPMA's recent conference McArthur said, "About four years ago when we decided to establish a management information system, MTS was a manufacturer of hydraulic testing systems with annual sales of about $7 million.

"The company had ambitious growth plans, and we couldn't do it without better management information," he said.

"The company ordered an IBM 360/25 in the spring of 1971. Within a year it was obvious that MTS was rapidly outgrowing its hardware," he continued.

The company began looking at the IBM 370/135 as an upgrade, but "we were concerned with the costs involved," he said.

"We had always been a single-source user, but we believed that a long-term lease on the 135 might be to our advantage, so we contacted Itel Corp.

"The original proposal was on the 135, but we finally decided a 128K 360/40 with Itel double-density disk drives in place of the IBM 2314s for greater capacity.

"This system cost us less than the Model 25 had from IBM, with enough added capacity to do $50,000 worth of contract work that year besides," he said.

Room to Grow

Since instituting its management information system four years ago, the company has grown to $17 million in annual sales, and the current system has the capacity to take MTS well over the $20 million mark and further, according to McArthur.

Current applications include a quote and order file, purchasing and inventory systems, a project cost-control system and an accounting information system.

Before computerization, it took as long as one month to order parts for a custom engineered system. Today, parts ordering takes three days, McArthur said, and he and his staff are now working on forecasting shop orders and requirements planning applications.

Besides the mainframe, the system includes six Itel disk drives, an IBM 2540 card reader/punch from Itel and a 600 line/min impact printer leased from IBM.

Maintenance for the CPU is handled by IBM, and the rest of the equipment is maintained by Comma Corp. "We've had no problems and no finger-pointing," McArthur said, "but we only need 30 days' notice to cancel our contracts."

As for advice to DP managers considering doing business with third-party lessors, McArthur suggested: "Select the third-party company with care, and when you get the serial number of the machine they want to give you, call the previous user and ask him about the equipment.

"Considering the amount of money involved here, we considered using a third-party lessor a very reasonable business risk," he explained, "and it has worked out very well for us."

Tight Money Keeps 370 Idle

(Continued from Page 1)

some of its funds and DPF gets some money from Ford Motor Credit.

One user responsible for third-party lease arrangements in the Bell System said his situation was somewhat more favorable than other businesses. Because of Bell's high credit rating as a regulated monopoly, he said it has easier access to money than other firms.

Asked what he would do if third-party financing rates became prohibitive, he said he would probably make do with his existing machines rather than acquire new equipment. However, he admitted the money supply had become much tighter recently, even for the telephone company.

A small company recently formed may have an answer for customers caught in a money bind. Computer Finders Corp., Tenafly, N.J., is able to secure financing for users because it looks to smaller banks for investments, while the larger leasing companies don't have the same flexibility, according to Paul Raynault, vice-president. Computer Finders many times can line up financing with regional banks and charges a customer "from 1/4% to 2%" of the purchase price as a fee, depending on the deal, he added.

Several weeks ago when there were indications that interest rates had leveled off, there was some renewed interest in financing third-party computer leases. But when interest rates again began to climb, the money became scarce.

Unless the cost of money begins to drop or at least shows signs of stabilizing, users will continue to have trouble lining up leases for their new machines.

IBM Asks Dismissal If Commerce Documents Withheld

(Continued from Page 1)

Report, 1970, Computers, and all related documents.

- "All documents relating to a National Bureau of Standards (NBS) study for the Department of Justice of the nature and extent of substitutability among various EDP products.
- "Documents which have been classified for security reasons by NBS, other government agencies or foreign governments.
- "Documents relating to or underlying an analysis of the number of computer systems performing teleprocessing applications in the U.S. in 1972.
- "Documents relating to or underlying a survey performed by Naval Electronics Laboratory Center regarding information processing technology, communications and electrooptical and optical technology.
- "Files related to the Annual Survey of Manufacturers and quinquennial Census of Manufacturers for several specific classifications."

IBM noted no other government agency had taken such an attitude toward the court orders, pointing out that even the National Security Agency and the Central Intelligence Agency have produced documents in response to the court orders.

"Only [Commerce] has asserted it is not bound" by the orders of the court, IBM said.

Noting the deadline for production of the documents was well past and that the trial was scheduled to start on Oct. 7, IBM asked the government to stipulate certain facts it said it would have learned from the documents in question.

Such stipulations are agreements by the parties involved that certain facts are true beyond question and therefore do not need to be proved during the course of a trial.

Among the 59 stipulations IBM wants the government to accept are:

- "The Bureau of the Census has determined that there are at least 150 manufacturers of processing units in the U.S.
- "The government has found that the value of IBM's shipments of general-purpose digital electronic computers was not more than 40.9% of all shipments of such equipment in the U.S. in 1971.
- "The government has found that the value of IBM's shipments of electronic computers was not more than 28.9% of the value of all shipments of such computers in 1972."

Other stipulations requested by IBM include the fact that IBM had a small share of shipments of disk and tape drives and that the firm was a major contributor to the U.S. exports which led to a favorable balance of trade.

A hearing on the motion is slated for July 8.

IBM Buys Satellite Firm

(Continued from Page 1)

Initial domestic satellite service from the new company will begin late in the 1970s. The IBM participation in a satellite venture will make it a common carrier competitor of AT&T, since the phone company also has plans pending before the FCC for domestic satellite facilities.

"This move could give IBM far greater market control over the computer/communications business than it can excercise today," A.G.W. Biddle, executive director of the Computer Industry Association, commented.

In addition, he said the CIA was worried that IBM and AT&T between them could squeeze out most of the other competition that is developing in the common carrier business and essentially divide the U.S. telecommunications market.

Most of these other firms in the business are less well financed than either IBM or the Bell system, he noted.

Health Data Banks Feared Sign of Social Control

By Nancy French
Of the CW Staff

BOSTON – The combined forces of social science, computer technology and medicine are turning the art of healing into a new profession – a profession of social control, chilling hopes for the future of our traditional concepts of freedom and privacy, said Dr. Matthew P. Dumont, assistant commissioner for drug rehabilitation, Massachusetts Department of Mental Health, at a privacy conference here.

As government involvement in financing both medical treatment and research grows, bureaucrats are becoming increasingly preoccupied with "establishing norms of health and behavior. Vast data banks of actuarial data on thousands of Americans will soon allow norms to be established," to the exclusion of variety and deviation of any kind, Dumont predicted.

"Already we have seen children given massive doses of electroshock therapy for marijuana smoking, heroin addicts and rioters treated with brain surgery, and closer to home, millions of 'depressed' adults treated with billions of doses of tranquilizers," Dumont said.

"The accelerating development of automated data systems and a government periodically driven to identify, isolate, monitor and control enemies of the social order will amount to a form of fascism which will never be undone," he claimed.

The doctor said he feared broad misuse of health records through computerization. Data banks are now being developed on a multistate basis containing identities and diagnoses of hundreds of thousands of mental patients without their consent or access.

Research findings that establish a correlation between adult disorders and childhood problems are prompting some overzealous professionals to treat problems literally before they happen, according to Dumont.

For example, because research indicates many delinquents have poor reading ability, some school officials may soon be treating children who read poorly as "potential" delinquents rather than tutoring them in reading, Dumont explained. This concept is known to social scientists as "preventive intervention."

In other situations, pediatric and psychiatric researchers have informed the parents of a newborn son with an extra Y chromosome that this may mean the child will have tendencies toward crime and violence in later life – a condition which should be watched carefully.

This very special monitoring itself could function as a "self-fulfilling prophecy," Dumont explained.

"It will soon be possible to predict addiction, violence, delinquency, protest or homosexual proneness on the basis of large-scale actuarial data.

"With increasingly powerful and subtle behavior modification techniques, it will be possible to control such behavior before it takes place," he pointed out.

It would require only minor modifications of technique and governmental purpose for any defined population to be controlled forever.

Dumont advocated a return to some of the most respected tenets in the history of medicine as a means of clearing perspectives:

First, "information about a person . . . belongs to him or her. A clinician or a researcher who collects information without consent, withholds it from the person whom it describes or permits it to be used for another purpose than which it was manifestly collected should be considered guilty of a violation of a basic human right."

Second, "health care should not be confused with social control. Any health care worker whose purposes are other than to alleviate the suffering or maintain the well-being of an individual should immediately reveal those purposes."

Third, "under no circumstances should individuating data derived from health care systems be sent to any governmental agency. The purposes, methods and consequences of the collection of aggregate data by governmental agencies should be subjected to review by new bodies of citizens, professional and lay, independent of both government and health care systems."

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Budget Committee Denounces Louisiana DP Ventures

By Edith Holmes
Of the CW Staff

BATON ROUGE, La. – The Legislative Budget Committee and some administrative officials here are charging that too much money is being requested by state agencies to pay for time on Louisiana's computer network.

Despite the efforts of the governor's task force on computers in state government and the attempts of the network's administrators to improve the system, the committee's budget message to Gov. Edwin Edwards recommended the state curtail spending plans for expanded computer services.

Chairman of the budget committee Sen. B.B. Rayburn of Bogalusa claimed the state has tried to get into the computer field too fast.

The budget committee recommended the continuation of a legislative watchdog committee to oversee the state's computer operations. While Edwards seems to accept this suggestion, a spokesman for his office said the governor felt the study his task force made of the center's problems was adequate.

Organized after revenue collector Joseph N. Traigle complained the computer center was slow in handling his income tax work [CW, Apr. 10], the governor's task force hoped to identify criticisms of computer consolidation. The alternative would be to "seriously consider" allowing some of the larger agencies, like the revenue department, to operate their own computer systems, according to the governor's study.

News Update

But Alfred Robinson, director of the Office of Information Systems (OIS) which manages the state computer system, contended this alternative won't be necessary. "We were working to implement many of the suggestions in the [task force] study before the committee's recommendations were made public," he said.

'People Problems'

The task force found that most of the computer center's problems were "people problems," that the top echelon had insufficient technical and management expertise and that agency personnel were inadequately trained.

The study also suggested a great deal of misunderstanding existed as to the scope of responsibilities various individuals and agencies had in computer center dealings.

Robinson and his superior, commissioner of administration Charles Roemer, claimed they were constructing a management structure with procedures for reporting and monitoring each participating unit's operation.

"We're beginning to be able to identify potential problems in a way we never could before," Robinson commented.

The OIS also has implemented training programs to meet what the study committee called a lack of "competent data system programmers and processors." Robinson said training is provided for the staff at the central DP center. OIS uses training programs from two of its major vendors, Honeywell and IBM, as well.

Roemer noted he had asked the state Civil Service Department to revise both testing and pay scales for computer personnel in a further move to upgrade his staff.

Training Sessions

In addition to in-service instruction for the state's computer operators, Roemer plans to devise training sessions for personnel of other agencies who prepare the raw information to be fed into the system. He hopes agency heads, too, will learn just what functions can be performed by the computer network.

In answer to the report's recommendation that consultants be gradually phased out of the operation, Robinson said consultants hired to bring his staff up to technical competence are no longer employed by the OIS. But he remarked that consultants who design particular program applications "will probably never be phased out entirely."

The governor's task force also advised the OIS to establish some organized system for planning and evaluating computer center operations.

"Some group composed mainly of disinterested but very knowledgeable individuals should serve this function," said the committee.

"The group would also provide a forum for those users having difficulties which must be subjected to some kind of arbitration."

Robinson said no such group has been organized, and OIS does not plan to establish one.

"The members of the study committee have continued to advise us on an informal basis as they did before the report was issued," he added.

The committee suggested the center pay attention to "positive public relations" because much is "right" with the computer system. For example, initial difficulties with vendors were solved by the network's administrators.

But the study group did require OIS to make substantial improvements in three months and to meet all recommendations within six months.

Rapidly approaching the first of these time limits, Robinson said, "You don't hire and train capable people within a deadline. We've acted on most of the committee's recommendations, but to satisfy the nearly 300 agencies in Louisiana will take longer than six months."

DPer in Good Position To Rise to the Top

MINNEAPOLIS – Data processing managers are uniquely qualified to assume top executive positions in major U.S. companies and will be filling the positions of corporate vice-presidents and chief executives more and more, Lee E. Sheehan predicted.

But this influx of new management talent will occur only if computer professionals begin now to prepare themselves for future developments in business, the vice-president of Honeywell's computer systems operations said at DPMA's Info/Expo here.

Sheehan noted information on all aspects of a firm's business pass by the DP manager every day, and he is therefore in a unique position to take a broad overview of the company's needs and objectives.

"If he knows his company, and if he begins to study its operations from a perspective outside the computer room, a DP manager can move rapidly and significantly in the organization," Sheehan said.

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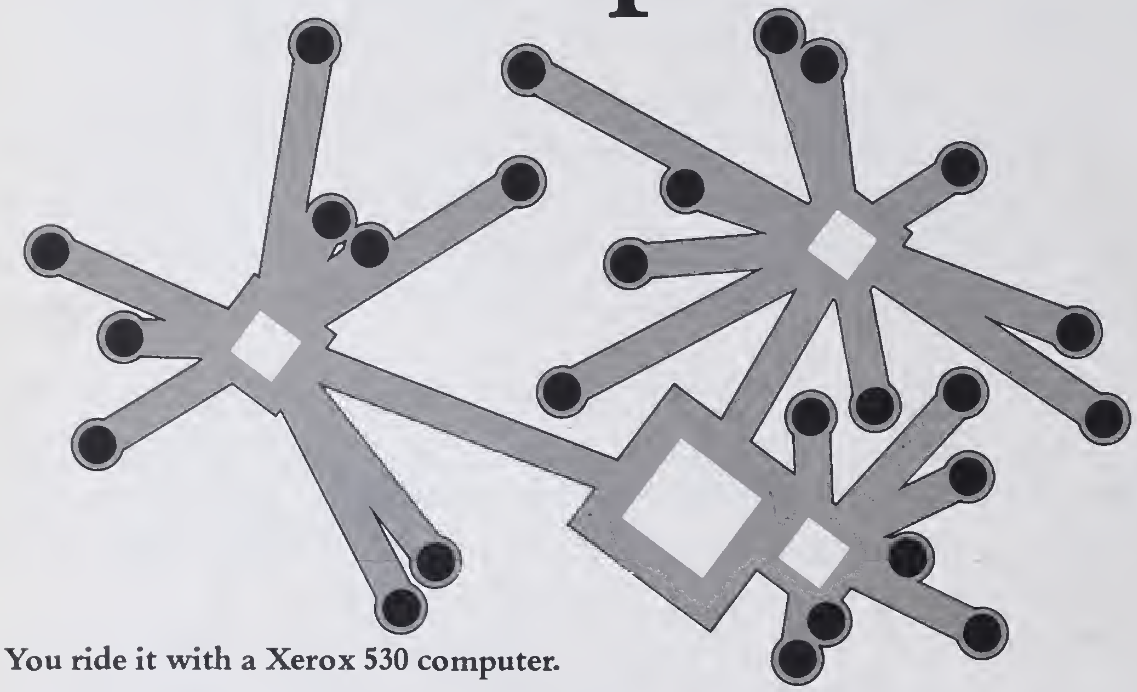

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Is National Network a 'Lemon?'

Pontiac Dealers Hesitate to Use Car Repair System

By Patrick Ward
Of the CW Staff

PONTIAC, Mich. – "I'm not looking for canned answers." That's how one Pontiac car dealer explained his disinclination to use an interactive car repair program that the auto maker offers free to its dealers who have teletypewriters.

Dealers access the two-year old PAR-1 (Problem Analysis and Response program) on the GE Mark III time-sharing system, using the same Model 33 ASR teletypewriters they use to order parts, trace the status of new cars they've ordered or file warranty claims.

But the 850 dealerships who can access the system make a total of only about 30 to 40 accesses/mo, according to Dean Smale, manager of serviceability for the Pontiac Division.

"We're trying to surmise why it doesn't get broader usage," Smale remarked.

"We do ask them to input the car serial number, and then some significant data in response to questions. And we think that they're gun-shy of using the terminal," Smale mentioned.

Dealing With Unfamiliar

PAR-1 aims at helping the dealer's mechanics deal with unfamiliar technologies and equipment on new cars. It includes modules on handling vehicle vibration problems, automatic temperature control systems, cruising speed controls, seat belt interlock systems and a high-energy ignition system, Smale noted.

> *"If you really have a problem . . . it might tell you something . . . you are overlooking . . . [But it makes me] . . . run back and forth. You go to the car and do what they ask you to do . . . then go back and report what your findings were, and then you get another answer on what to do . . . " – a service manager*

The modules branch to different questions and suggestions depending on the mechanic's response.

Four Pontiac dealers across the country were recently asked about their use of the terminal. Two service managers said they never used the system; one used it once a month at most; another was not using the system at his present dealership but had previously. He spoke highly of the system's capabilities.

One dealer said he didn't use the system because it gave answers to relatively common problems he didn't need help on, not the "one in 800,000 occurrences" that puzzle him.

Building a system that would have answers to such rare questions would be much more expensive, he remarked.

He was also the only one to complain about garbled transmission over the teletypewriters.

This service manager had once had two teletypewriters to order parts, check the status of new car orders and present warranty claims. The first two applications continue to work well, he said, but the warranty claims application brought too many errors and late payment, so he pulled out one terminal and sent claims by mail.

Now "we're getting our money much quicker," he stated.

If You Have a Problem

Another service manager said the PAR-1 system could be good "if you really have a problem. It might tell you something . . . you are overlooking," he noted.

But in his own shop the system is used once a month at most because it makes auto mechanics "run back and forth."

"You go to the car and do what they ask you to do . . . then go back and report what your findings were, and then you get another answer on what to do . . . "

This not only ties up a mechanic, but the person operating the teletype as well.

Pontiac does update the modules, Smale mentioned.

"You could just as well use the manual," the service manager said, but then he added that the manual is printed early in the year and the computerized system might be more up to date.

He did commend the system for giving the mechanic step-by-step advice, and for the fact that the hard-copy output can be torn off and handed to the mechanic and can be saved for the next job.

Another service manager said that the system had performed very well where he had worked before, but on his present job he simply relies on Pontiac literature.

The fourth service manager noted the system had appeared "pretty complicated" when it was demonstrated to him in November, and he hasn't used it since.

Everything is in the manual anyway, he remarked.

In spite of the lower than expected use, Pontiac's Smale said the system does get good usage when dealers have to handle a new product for the first time. Pontiac plans to keep and expand PAR-1, he stated.

Offering the program costs GM $200- to $300/mo for storage and usage costs with the individual dealers paying for the terminals.

"We don't . . . ask a dealer to put in a terminal just for this program," Smale concluded. "If he's got one there, here's another use he can put it to."

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PAN-
WHAT?

Police Come Calling on Command From California City Citizens

By Marvin Smalheiser

CW West Coast Bureau

HUNTINGTON BEACH, Calif. – Whether a resident of this city calls the police about a barking dog or a bank robbery, he goes on-line to a computer system that can get an officer on the way within seconds.

The $800,000 command and control center is producing substantial dollar savings as well as reducing the time and paperwork involved in answering police calls in this city of 157,000 persons.

Police say the system is improving their effectiveness and apprehension rate as well as increasing their own safety.

Installed by Motorola Communications and Electronics, Inc., the system has been operational for about a year with "nil downtime," and it is saving the city about $29,000 annually compared with the previous manual system.

Control center personnel, called complaint writers, take the approximately 50,000 calls received annually and enter call data into a computer through CRT terminals.

The data is simultaneously displayed on the CRT manned by a dispatcher, who can also display the status of previous calls and information about availability of police personnel.

The dispatcher's CRT is directly controlled by the computer and automatically lists pending complaints in a priority order, holding them until input shows they have been resolved.

Using the CRT information and a master address file on a Burroughs B2500 at City Hall, the dispatcher can send an officer to the scene of the complaint. When the complaint is resolved, he logs the case out of active files onto magnetic tape.

Officer Frank Morrelli of Huntington Beach Police Department is seated behind display console in the police department's command and control center.

The system can also send hard-copy messages to 66 patrol cars equipped with special teleprinters, which save an average of 43 seconds per message over voice-radio communication.

The officer in the patrol car can also use the teleprinter to notify the control center of his status – when he is *en route* to an accident, investigating or returning to the station.

Another facet of the system is a Silent Alarms/Canned Complaint system, which provides automatic dispatching to banks, currency exchanges, jewelry stores and other businesses. A microfiche unit available to the dispatcher displays building floor plans, entrances, exits, etc.

Sgt. Robert E. Fickle, who heads research and development at the police communications bureau, said an unexpected benefit of the system is the personnel file.

It shows which officers are on assignments, which have days off, whether they have special assignments or skills or are using a vehicle.

The system is currently programmed so fire and other city departments can key into the central address data bank for information to improve their operations.

Future plans call for a vehicle locator system which will graphically display the location of all police vehicles in the city, the services requested and the status of particular incidents.

System Configuration

The entire command center is controlled by a dedicated DEC PDP-11/20 minicomputer, interfaced to the B2500, whose address file contains identification on 80% of the land parcels in the city.

The 11/20 – soon to be upgraded to a PDP 11/40 – acts as a front end to the B2500 and as a message switcher for an Orange County car warrant system.

The equipment configuration includes 28K of core memory in the 11/20 and a DEC fixed-head disk with 256K.

The disk contains files on cases, vehicle statistics and police personnel data. A tape drive is on order for the storage of case histories. In addition, there are four NCR printers in communications control.

Capt. Michael Burkenfield, in charge of the uniform division and a moving force behind the system, said it is "exceeding what we thought it would do.

"It has worked very efficiently and easily. We anticipated a lot of problems in human engineering and in the conversion from the manual system."

The most important problem, Burkenfield said, was public acceptance rather than hardware or software.

The master address file disturbed some people who felt it was an invasion of privacy, although it was just the automation of existing information.

Cooperation Helped

Lt. Gary Davis, administrator of the control center, attributed the system's success to the overall cooperation between the police department and Motorola.

At the start of the three-year project, there was some problem in communication between police and computer personnel. But Motorola permanently assigned people to the project and the continuous exchange of information helped iron out the problems, Davis said.

The system's original design was done by the police department and Public Safety Systems, Inc., Santa Barbara, Calif., after the firm was hired to do a study of the city's police needs for 1985-95.

The system was funded with money from the Law Enforcement Assistance Agency (LEAA) and the city of Huntington Beach.

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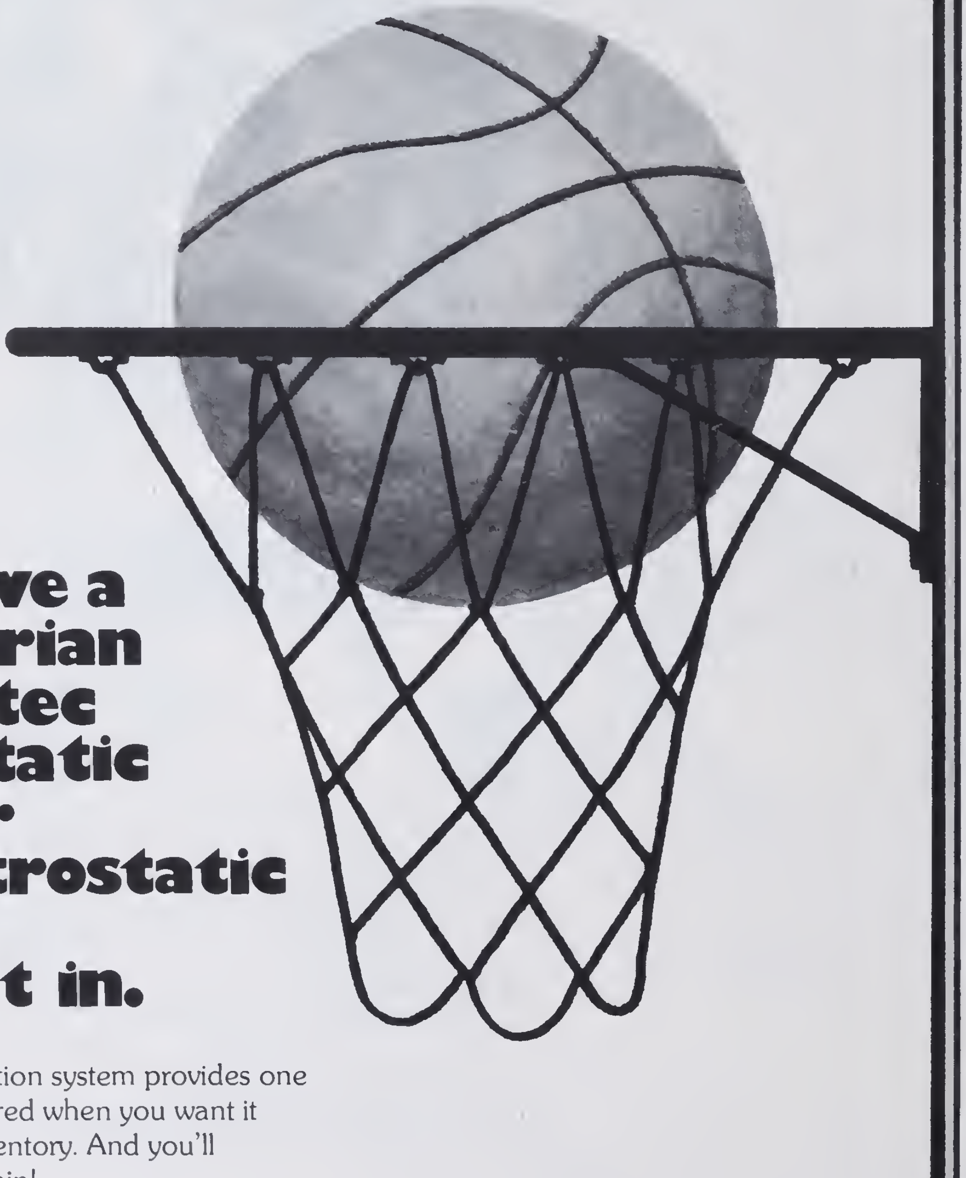

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Computerization Completed in One Year

Ky. Voter File Eases First Reregistration in 50 Years

By Edith Holmes

Of the CW Staff

FRANKFORT, Ky. – In less than a year, Kentucky has computerized the state voter registration system and completed the first reregistration in over 50 years.

More than 1.4 million voters are now registered with the state's central computer bureau in Frankfort, according to assistant secretary of state Frances Travis. She said efforts to revise the registration system followed the centralization of the computer system and the legislature's requirement that all voters reregister in 1972.

Up until last year, several counties had not purged their voter rolls for decades, Travis commented. One county, for example, showed 7,000 registered voters when its population census indicated only 4,500 people.

Once the legislature decided to act, the secretary of state's office had one year to write the program, brief county clerks and persuade the public to reregister, said Travis.

The program was written and the system designed by the office itself with the assistance of a consultant. Travis said reregistration took place using the central computer, an IBM 370/165.

First, the state tried to use IBM 3270s to transfer county information to the central processing bureau.

But the expense proved too great, Travis remarked, and county information is now entered on floppy disks. From there, data is transferred to tape and taken to the central computer.

While Kentucky's central computing bureau has had some problems, Travis claimed no major difficulties occurred with the reregistration program.

"We plan to continue to do our own updating of records," she said, although all jobs will be processed on the state computer.

With Kentucky voter rolls accurate and complete for the first time in half a century, the state Board of Elections has access to statistics on the number of voters registered, party affiliations, percentages of voters who cast ballots in elections, number of precincts, race and sex of voters.

Voters also benefit because any change in name or address can be handled automatically.

And Travis said computerization has eliminated the state's greatest problem – the purging of county records. The computer now nullifies voters who are deceased, fail to vote or change their addresses without notifying authorities.

Travis said Kentucky is the third state in the nation to adopt an automated system of registration. Virginia and South Carolina also have instituted such programs.

Bart Delayed by Backup Failure

SAN FRANCISCO – A failure in the central control system brought all trains of the highly automated Bay Area Rapid Transit (Bart) system to a halt one day recently during morning rush hour. Trains were stopped for more than an hour, delaying between 5,000 and 10,000 commuters.

The failure occurred when the central computer system, which regulates train speeds, routes trains and opens and closes doors, had an operating system crash. This would not normally cause a problem, since the system, built by Westinghouse with two medium-sized Xerox Sigma series computers, is duplexed, and a backup system is supposed to take over. But this time the backup system wouldn't work either.

Couldn't Cope

A Bart spokesman blamed the failure on "human error," saying someone "inadvertently failed to remove" test programs loaded into the computers by the time the system started up at 6 a.m. The test program apparently ran the system for a while. But by 7:58 a.m., neither the primary nor the backup system could cope with the existing conditions – and the trains stopped.

The Bart system has been plagued by problems with the automatic train control system since its inception. Recently part of the system began dispatching trains by computer without the manual backup previously required by the state because of fears about safety.

SCI Awarded Contract For Wastewater Treatment

PALO ALTO, Calif. – Systems Control, Inc. (SCI) has been awarded a $427,000 contract to automate the 4.5 million gallons-a-day Franklin wastewater treatment plant in southwestern Ohio.

Let by the Miami (Ohio) Conservancy District, the contract calls for SCI to design and implement a computer-based system that will analyze wastewater before, during and after treatment, and control the entire treatment process.

The goal of the project is a system that would operate unattended, but be applicable to thousands of small wastewater-treatment plants throughout the U.S. and reduce the cost while increasing the effectiveness of treatment.

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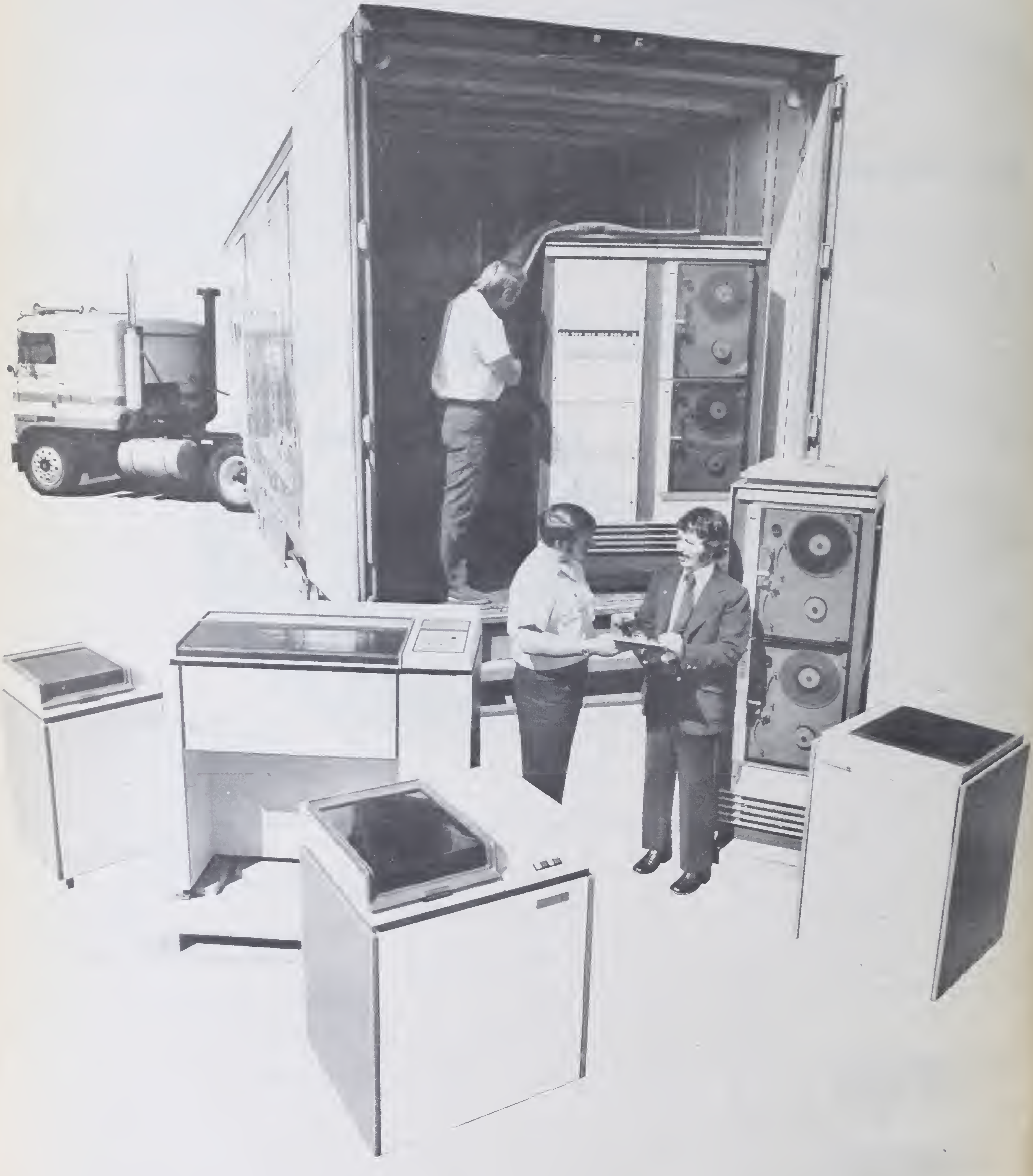

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The mini killers
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Video-Assisted DP Training Saves Florida $250,000

TALLAHASSEE, Fla. – Compared with other instructional methods, a video-assisted training program implemented by state officials has saved Florida an estimated $250,000 in DP training costs.

Faced with training a diversified staff of approximately 3,500 employees in 11 separate and scattered locations, Green B. Horton, DP training coordinator for the state, selected a subscription library-rental plan for video-assisted instruction after investigating educational alternatives from "stand-up" seminars conducted by DP professionals to computer equipment manufacturer courses.

While Horton was impressed with the quality of classes offered by equipment manufacturers, he noted the average cost of nearly $20 an hour was prohibitive, considering the size of Florida's DP staff. Because the state required a minimum of 8,000 hours of outside training to satisfy its needs, he estimated such courses would have cost taxpayers over $157,000.

At a rate of about $3.15 per student hour, the video-assisted instruction program and library developed by Advanced Systems, Inc. comes to about one-sixth the cost of alternative methods, Horton said. This savings does not incude the initital cost for video equipment, however, which the state also purchased from Advanced Systems.

Professional Development

Consisting of videotaped instruction by DP professionals, lecture outlines and course study materials, the programs can be viewed under an instructor's guidance, or individually, to permit the student to progress at his or her own pace, he commented.

"The video-assisted instruction program covers the same territory as equipment vendors' courses and gives us much more flexibility," Horton said.

Because the state conducts an education program to keep its staff proficient in dealing with several types of constantly changing equipment and software, course requirements must be continually updated. Horton noted classes must be capable of teaching every level of employee from data-input technicians to top management and be flexible enough to adjust to state agency projects ranging from future planning to the issuing of state warrants.

"We selected a subscription library rental plan because it permits us to pay for those classes actually needed by state agencies," Horton said. "As our needs change because of new equipment or other reasons, our library changes to meet this need."

Schedules of anticipated training needs are developed for all DP units in Florida once every six months. DP centers meet additional training needs with tapes purchased from several video-assisted instruction vendors, Horton said.

One person attached to each of the state's DP units acts as training coordinator and is responsible for conducting the classes at that center. While the coordinator remains available throughout the course should students need assistance, each group proceeds through lessons at its own speed, Horton said.

When Needed

Horton indicated that regardless of the number of people, or the level of their experience, classes can be implemented whenever and wherever they are needed.

"If a particular center is having a recurring training problem, for example, we can ship in the appropriate course to fulfill the need, literally overnight. We don't have to wait for a new class to be scheduled," he said.

Similarly, employees requiring a refresher course don't have to sit through the whole course.

Horton commented the one drawback to video-assisted instruction programs is that they tend to be built around two or three types of hardware.

For example, the state has separate ANS Cobol training courses for IBM, Honeywell, Burroughs and other machines. If it ever becomes possible, "I would like to see vendors of video-assisted instruction get away from centering their programs on particular hardware systems," Horton said.

Film, Videotape Instruct in Use Of CICS Monitor

KANSAS CITY, Mo. – Data base/data communications system programmers can now receive film or videotape instruction on the use of IBM's telecommunications monitor, CICS.

Available from Edutronics Systems International, Inc., the course package (No. 1,200) consists of five lessons accompanied by a structured workbook designed to allow the student to teach himself.

The lessons are progressive, starting with an introduction, then moving to the application program interface. Lesson three explains major resources of the system and lesson four details supplementary features that are also available.

The final lesson on "The System Flow" provides an overview of the CICS system in hopes of encouraging more efficient applications programming and effective debugging methods. Final workbook exercises require the student to work with comprehensive problems using overview diagrams to make sure he or she understands the CICS system as a whole.

If purchased, the course costs $1,250.

In 8mm, 16mm Film

Available in 8mm film, 16mm film, 1/2-in. reel-to-reel videotape and 3/4-in. videotape cassette, it may also be acquired through a lease arrangement, a spokesman said.

Lease prices vary depending on the number of options included in the contract. But leasing this particular course means taking out a "subscription" under which the subscriber can exchange the lessons, free of charge, for another course in the library.

Contracts can be written allowing access to 10 modules or courses for a year, up to 200 modules over a five-year period. The smallest lease contract available sells for $3,000, the spokesman said.

Edutronics will lease or sell projectors and video equipment to go with film and tapes at additional costs. He added that the lease-contract price for courses on film does include the use of a projector. Edutronics is at 3435 Broadway, 64111.

Thinking about distributed computing?
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With System III you also get supporting software systems to compile and run your RPG II programs. That includes a DOS, data and source edit and sort/merge, too. And all that's going to make your programming a lot easier.

And you're dealing with a company you can count on. We're the only minicomputer company that unconditionally warrants our software for a full year. With nationwide service, of course.

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Editorial

Broken Promises

> *"I am directing this blue-ribbon panel [the Domestic Council Committee on the Right of Privacy], within four months, to begin providing a series of direct, enforceable measures – including regulations, executive actions, policy changes, legislation where necessary and voluntary restraints – all of which we can immediately begin to put into effect."*
>
> *President Richard M. Nixon*
> *Radio address on privacy, Feb. 23, 1974*

> *The council will consider a limited set of initial recommendations at a meeting July 10.*
>
> *Philip Buchen, head of the Domestic Council*
> *Committee on the Right of Privacy, June 24, 1974*

Those cynics who dismissed the Nixon effort to provide a shield of personal privacy for every American as just another White House public relations gimmick to try to reduce the heat from Watergate fires appear to have been right.

Despite all the mileage Vice President Gerald Ford is getting from his role as chairman of the Domestic Council on the Right of Privacy, little real progress seems to have been made, even though the President's deadline for action is already behind us.

> *"We need more than just another investigation and just another series of reports. We need action."*
>
> *President Nixon's Feb. 3 address*

Yet Buchen, Ford's political crony from Michigan who was charged with heading the effort in this area, can only say now that the staff will have prepared some "initial" recommendations in limited areas for the council's consideration on July 10.

Nixon was clear in his radio promises to the nation: "This will not just be another research group . . . it will be primed for high-level action.

"This privacy committee will build on the fine work that other groups have already carried out, and I will see to it that it is supported by the best talent available," Nixon promised then.

Yet the group appears to be heading in the direction of just another research group; it is collecting more data, and has called on a collection of professional societies for help.

Enough is enough. We agree with the President when he said. "we need action" and "we must move quickly."

There have already been enough studies of the issues involved in data banks and privacy, and plenty of solutions to the problem have been proposed.

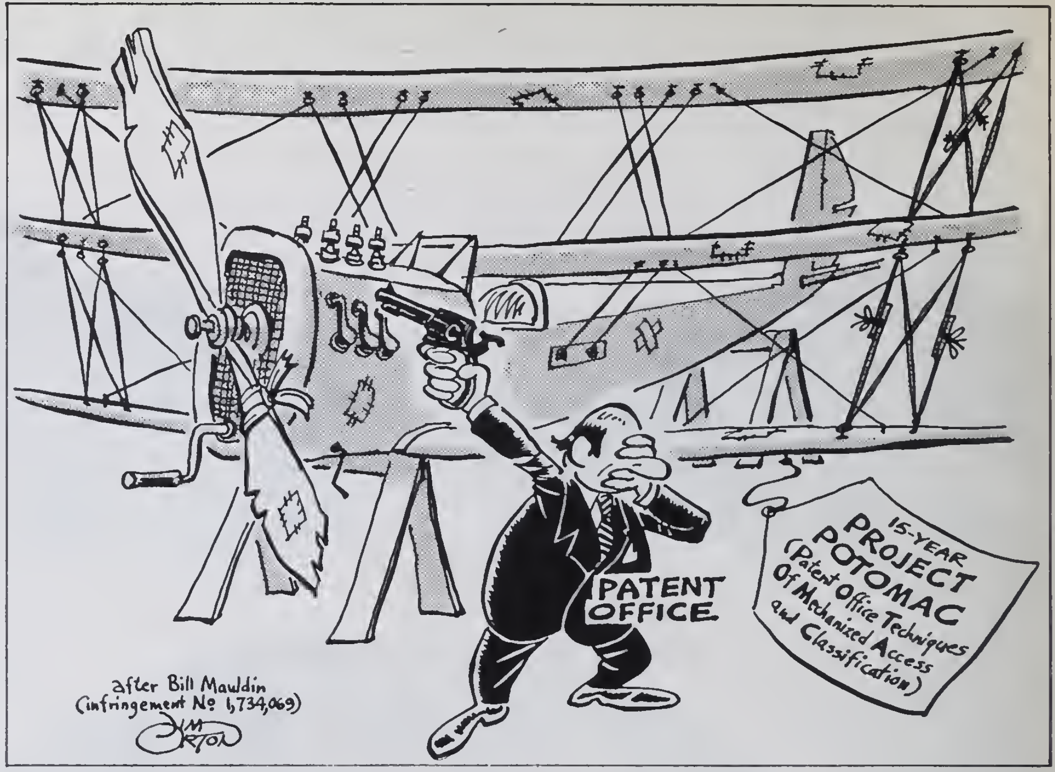
The high-level review committee, as proposed by the President, was to review and sift among these alternatives and come up with concrete proposals over two weeks ago. However, it has not yet done so and appears to be going the route of all Washington committees – obscurity.

Meanwhile, on almost the exact day the group was ordered to come up with concrete proposals, the man in charge of it – known more for his loyalty to Ford than for his understanding of the complex issues of privacy and data banks – told a DPMA audience that DP people should "mutually respect" others' rights to privacy.

In addition, even though the President specifically promised the American people that the new board would look into both private and public data banks and determine regulations for each, Buchen is now talking about some limited regulations on some data banks in the public sector.

It is time for the President to live up to his promises in this area. If the people chosen by Ford cannot handle this problem, they should be replaced immediately.

The President should stop the stalling of the domestic council, which, like every other bureaucracy, probably wants to perpetuate itself as long as possbible, and get a group of people that can make the necessary decisions to provide action – now.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JIM ORTON

Letters to the Editor

Current Business DP Curricula Concerned With Highly Educated

I was a speaker at the recent NCC session entitled "Business Data Processing Education – A Decade of Failure." In the June 19 issue of *Computerworld,* Dr. J. Daniel Couger made the statement that I, as well as my fellow panelists, "spoke from a background of ignorance about prior work on curricula" and that we were unprepared in presenting our papers.

I resent personally and professionally the implication that I gave a speech at a national convention unprepared in the subject matter. The material which I presented and from which I drew my conclusions was based upon two years of conversations and correspondence with over 800 data processing instructors throughout the U.S. and 10 years experience in the real world of business data processing.

Couger's implication that Curriculum '68 and other curricula directed toward degree programs have some bearing upon vocational business data processing education is completely without merit. Those curricula, of which I was totally aware, are directed to the 3% of those who enter the data processing labor force with baccalaureate or higher degrees. I am concerned with the other 97% who enter from high schools, vocational schools and community colleges.

If Couger will venture from his ivory tower from which irresponsible columns are written, I invite him to learn what business data processing is like in the real world. Perhaps then he will realize that there are more important things to do than search for papers which provide "an important contribution to the literature of the field" because they evaluate the "efforts of predecessors."

Gary B. Shelly
Fullerton, Calif.

Ombudsmen Can Aid in Elections

Regarding "Delays, Errors . . . Election Counts" [CW, June 19]:

Reported concern about the computerized elections this November may be handled with assistance from Association for Computing Machinery (ACM) ombudsmen.

The ACM Detroit chapter was probably the first to look into the problem and in 1971 issued a report titled "Technical Analysis of the City of Detroit Punched Card Voting Experiences of 1970." Incidentally, this particular project was one of several problems providing the impetus to launch the ACM ombudsman program.

In 1972, the Los Angeles ACM chapter, under the very able leadership of ombudsman Dahl Gerberick, issued "A Description of the Data Processing Requirements Necessary to Perform Major Election with the Los Angeles County Votomatic System." This is an analysis of a successful election.

Los Angeles ombudsmen are presently at work on two other projects: one dealing with the privacy and the administration of computer-based systems, the other on the computer involvement in the election process.

Meanwhile the Austin, Texas, ACM chapter is now working with a state senator attempting to draft legislation amending the state election code with emphasis on setting standards and procedures for use of computers in tabulating election results. Mary Ann Chapman, the local ombudsman, made the original inquiries into the Travis County vote-counting last May which resulted in the definition of the present effort.

The ACM ombudsman program is alive and available to serve the public.

In addition, Austin, Detroit and Los Angeles harbor specific experience in this case.

For copies of the Detroit and Los Angeles reports write ACM Director of Operations, ACM, 1133 Avenue of the Americas, New York, N.Y. 10036 and include $1/copy to cover duplicating costs.

For work currently in progress, etc., plan to attend the ombudsman session at ACM '74 which will take place right after the November election.

A.V. Dundzilla
Committee Chairman
Ad Hoc Ombudsman Committee
Purdue University
Hammond, Ind.

'Firmware Debugger Dump?'

R.A. Sobieraj discussed a smart "IBM OS dump" requirement in the June 26 Letters to the Editor. If one were to go to the trouble of making a dump program which "determined the extent of the dump" to adequately get all pertinent information (but no more), one might just as well implement a complete debugger. This, of course, would necessitate a trace along with interpretive execution.

The need is there, but with current hardware one wonders if the overhead is worth it. Maybe a "firmware debugger dump" is the answer.

William Salmi
Regional Technical Services Manager
University Computing Co.
El Segundo, Calif.

What Else Would He Say?

I had to laugh at the letter from Ken Opp in the April 10 issue ("Some Words of Praise From a Lockheed User").

He raved about the virtues of the Lockheed System III, while casting aspersions at the IBM System/3 hardware, software and service.

What else would the local sales and service representative of Lockheed Electronics Corp. say?

John Edson
Computer Programming Manager
Norden Laboratories, Inc.
Lincoln, Neb.

In his original letter, Opp identified himself only as the manager of the Computer Division of the Credit Bureau in Lincoln, Neb. He is, in fact, also the local OEM dealer for the Lockheed system. Ed.

Letters to the Editor

Distributed Processing Favored for Business

" 'Too Much Power' Too Hard to Handle" by Patrick Ward [CW, June 19} describes an approach to data processing that in my mind is somewhat contrary to the trend in hardware technology that is building physically smaller, environmentally more tolerant, internally faster, and functionally "bigger" machinery at less cost. This trend suggests more predominant application of mini or small-scale business computer-based distributed processing networks – especially for large, geographically dispersed companies.

Four fundamental motivations lead to this conclusion.

- Single sites (centralized) are more vulnerable in terms of security, power failures, etc.
- Getting the requisite level of user involvement is more difficult under centralization.
- Logistics to support a large central site are complex and usually ineffectively designed.
- Managerial talent capable of operating centralized DP/MIS effectively is in short supply.

While cost factors are important, effectiveness of the DP function in supporting the business needs of the company is paramount. It is far better to spend a little more for hardware and be effective than to run an "economical" but ineffective shop.

It is not even clear that the distributed network approach to DP would be more expensive than the centralized approach, given the decreasing prices/increasing power of the mini and small scale equipment. All sites would "report" to the corporate computer in the network in summary or aggregate, thus feeding the corporate data base which, in turn, they could also access.

In fact, by placing the processing at the user location, data entry and edits against the local master files will greatly increase the accuracy of those data hitting the corporate data base yielding all the obvious associated benefits.

Albert C. Patterson, IV
The Diebold Group, Inc.
New York, N.Y.

Transferable Systems?

In reference to the editorial "Learning to Share" in the June 19 issue of *Computerworld,* I would like to take exception to the indication that transferable systems are not being developed in the interest of other government entities which might use them.

The State of Florida, Department of Health and Rehabilitative Services' HRS Data Center has for the last four years been engaged in just such an effort.

I consider Florida one of the leaders in the field of transferability and would welcome any information from readers regarding systems they feel could be transferred to other states.

H.F. Goodwin
Director
HRS Data Center
Jacksonville, Fla.

Ottawa

This is the last of four major national computer conferences I have attended in six weeks, not counting a discomfited attempt to hold my own private PIPS meeting in Tahiti. In many respects it was the smallest of the four – half the registration of the English and Australian conferences, a much smaller exhibition, only two or three sessions at a time instead of a dozen at the NCC. Yet Snow White and six of the current dwarf family all showed, more than at any of the other locations. Only Xerox, the transparent dwarf, was completely invisible, although Control Data had withered away to a mere Institute.

This was peculiarly interesting, for CDC has had a major subvention from Canada to design and build some of the new Cyber 170 models near Toronto. In fact, my major activity at the meeting was to discuss and debate the value of just such governmental support policies.

I have the picture of extra-Canadian activities: Japan, France, Germany and so on; the local application was done by others. I got a small snit under way by referring to an "aboriginal" computer industry, where "indigenous" would perhaps be kinder.

At this meeting the Canadian Information Processing Society and the Data Processing Institute (the latter restricted to government users) collaborated – a first. There is some interest in merging or federating the various Canadian activities, to form a Cfips for example.

I tried to discourage this in favor of an expanded *North* American Federation of Information Processing Societies, with appropriate changes to maintain Canadian representation in Ifip.

Some day, when we have a computer society of 200,000 souls – or 100,000 souls and 100,000 managers – I want my Canadian friends inside, not outside. Even if we have to call it NACS, the North American Computer Society!

We didn't have the glorious weather of Sydney, and I missed the clamor of Tokyo and Seoul. Politics was raging; the national elections are imminent. My old friends in DPI had me made a Professional Bureaucrat, wined me and dined me and let me dance with their wives. The wine was awful, the dinners were good and the wives were great!

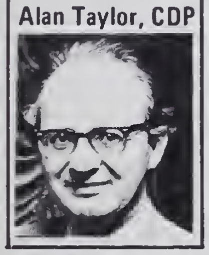
Herb Grosch

No Single Set of Actions Characterizes Underselling

The Taylor Report

By

Alan Taylor, CDP



Underselling is a well-known term in computer circles. Calssically it refers to the practice of obtaining orders by offering a price well below the actual price that will have to be paid to get the expected results from a computer system.

The success of underselling in the data processing field is due to the fact that there is a long time between the computer order and full implementation of the promised system.

During this time it is practically impossible for a buyer to switch vendors without serious internal management problems. The vendor can often claim that more memory is needed if all the applications are to run simultaneously and therefore can jack up the actual price to a level which would have lost him the contract if the user had only known the full cost earlier.

But, even though the general practice of underselling is well known, very little is apparently known about some of its latest characteristics: how it is done, how a user can spot it ahead of time and so forth.

This ignorance of underselling was brought home to me by a letter from a Chicago insurance DP man – Wesley T. Saville.

He said that most computer systems were either undersold or oversold, with overselling particularly successful to little or middle buyers.

At the same time, he both asked me to speak out on these matters – *and said that he himself would do so!* That was something I have been waiting for for years – because I am far happier working to make computer systems successful, and helping computer users, than attacking abuses. But until Saville and enough like him are talking out and being heard effectively I have to carry on.

The key to understanding underselling is to understand that underselling is wrong. The very word itself nowadays is used as an insult, rather than as a description. Underselling is present whenever a user's interests are hurt because what the vendors offer for a particular price is simply never made available at that price.

No single set of actions – such as ordering more memory before delivery – can show that underselling has occurred. Such a memory order can often be a perfectly legitimate order, resulting from a new application. It only becomes underselling when there is a discrepancy between what was offered to be done and what is said to be adequate to carry it out.

The discrepancy – rather than the action – is what defines underselling.

Discrepancies of course can occur in many ways. Underselling is therefore not restricted to new hardware. It can involve *any* of the items of a computer proposal that are important. And there are plenty of those, as we all know.

For instance, in one situation I noted recently, a perfectly accurate proposal listed the programs to be created, but omitted any provision for essential file maintenance. That came extra and at a pretty high price when the "omission" was discovered. *Underselling by program omission?*

In another situation, assurances were given on the adequacy of the service. The service operation was to be adequate, based nearby and with a base that had trained people and a full supply of spare parts, etc.

In fact the base did have trained people, but few had been trained on the equipment, or on anything like it. And the parts supply was as full as the company budget for maintenance would permit it to be, but pretty empty when it came to getting parts for the system concerned. *Underselling by support omission?*

Then again, the attributes of the application program can be exaggerated. A management information system may be said to have been "tested" or "proved." In fact, when it is delivered, it can be found that some of the routines can't even get the arithmetic right!

The system may have been tested, but the tests were not adequate to show that the system was worthwhile or safe to put into immediate use. *Underselling by inadequate testing?*

The quality of the hardware itself also can be important. If the salesman claims it is adequate for the job, or up to the latest industry standards, and there are a great number of hardware problems, then again the user may find himself not getting what he paid for. *Underselling by poor performance?*

In each of these four instances I have put question marks after the type of underselling suggested. There is no categorization of even the most common types of underselling generally known. I don't know whether the examples of what I think of as underselling are really what other data processing people think of. We are all ignorant. And this should stop!

So I look forward to hearing what users in general – small and large – think of as underselling and any categorization of the practice that they can suggest.

Saville says that he is willing to speak out and be heard on these subjects. Let's provide him (and ourselves) with the ammunition he needs to see that when he speaks out he is worth listening to.

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Is Underselling Successful?

(1) Have you met underselling tactics since 1970?

Yes ( ) No ( )

If so, were they successfully used.

Yes ( ) No ( )

(2) What kinds of underselling tactics come to your mind?

____

(3) How do you think underselling should best be categorized? ____________________

____

Name________________________

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Teaching Computers English? A B.S. Story

By Miles Benson

Special to Computerworld

The Sociology of Computing

One of my favorite computing characters is Buster Swashbuckle. You would have guessed this anyway if I hadn't told you, but Buster Swashbuckle is a made up name. I value my job too highly to tell you his real one.

Buster . . . we could call him B.S., both for convenience and because computing is founded on a superstructure of acronyms and abbreviations, but it seems somehow crude . . . Buster is a salesman.

The trouble is, he's not paid to be a salesman. He's paid to be a research analyst. And a manager of research analysts. And to gloss the corporate image by flaunting his Ph.D. in public places. But not to be a salesman.

Well, Buster learned something in college besides how to pass prelims and write a thesis. He also learned which side his political bread was buttered on. He learned that an idea counts for naught if you can't sell it to the money-counters.

That's probably because he got his degree in Management Information Sciences. Those business schools just don't let their technology tail wag the commercial-world dog.

The Crew-Cut World

Be all of that as it may, when Buster left the ivy-covered halls of student rebellion and joined the crew-cut world of Ace Aerospace, he didn't think he had to go through any real-world adjustment period.

Like when he first got to Ace, he was fresh from a big college project which involved using the APL language.

APL, for those of you who don't speak the dialect, is a super-concise language designed primarily for complicated mathematica. It has other facets, and its advocates often verge on being disciples, and claim that APL can do anything.

Buster was one of those. He decided, as his first technical-sales achievement, to tout the APL of his eye to anyone who would listen. And because Ace was at that time in the throes of rebuilding their production control system, he picked that project to begin on.

It may be that some of you readers are snickering a little about this time.

Well, you're right. APL has about as much to offer a production control project as a Lincoln Continental has to offer under gas rationing. The basic tools needed in production control are file manipulation and data structures. APL's elegance lies in other realms.

The meeting with the production control people was a near-disaster. Buster was hooted off his academic pedestal by a barrage of pragmatic questions. The luster of APL was badly tarnished in the exchanges which followed.

I said the meeting was a near-disaster. Buster, you see, had learned another important thing in college. He had learned to listen. And his agile mind, while fending off the anti-APL onslaught, had picked up a new idea.

New Idea Called Cobol

The new idea was called Cobol.

You're right, Cobol is not a new idea. It wasn't even new to Buster. Except for one thing. Cobol was held in high esteem by the production control people. *That* was new to Buster. The academic world from which he had newly flown considered Cobol to be one step above diptheria.

Buster didn't sulk long. His attempt to sell APLs as oranges (that's the last rotten APL joke to spoil this barrel, by the way) had been disastrous, and he had a few wounds to lick. But they healed, and besides, there was a new sale to make.

If Cobol was *that* good for production control, which after all is a fairly sophisticated commercial-type project, why wouldn't it be equally good for the sophisticated scientific-type satellite tracking program Ace was just beginning in support of the Solar Orbiter project?

There seems to be more snickering happening out there. Cobol had as much appeal to the satellite trackers as suntan lotion has to Laplanders.

If the meeting with the production control folk was a near-disaster, the meeting with the trackers was an ego-destroyer.

Sobering Down

Well, two false starts is enough to sober even the brashest of Ph.Ds. Buster settled into the corporate mold for a while and designed some traditional solutions to some traditional problems.

He did good, as they say, and learned some other things in a less visible way.

He bided his time, and grew, and eventually he came to manage the team of research analysts

(Continued on Page 17)

Model 204

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Quixotic DPer Sells Idea to Management

(Continued from Page 16)

with whom he had worked.

His salesmanship, reined in to less exotic goals, served him well with upper management, and he began a steady march up the corporate ladder of success.

But you couldn't hold the old Buster down. Not totally, anyway. He had just gotten some funding for a totally new research project. He conceived the idea, and he sold it to the hilt, and this time management bought it.

What was it? Well, have you ever programmed for an IBM 360? Have you ever used JCL? If you have, you know that for all its flexibility it is an abomination to the user only one cut above 96-hour turnaround.

On a popularity scale of 0 to 10, some programmers give it a minus 5. The document which describes it is about as readable as Revelations, and as thick as the Manhattan yellow pages. I exaggerate, of course.

But not much.

Buster set out to solve this problem. His research grant will keep him in bytes and card chips for about two years.

And his approach? Natural language.

If English is good enough for humans to talk to each other with, why isn't it good enough to talk to computers with as well?

There are those who answer by saying that if God had intended us to talk to computers in our own language, He would have built them that way. But I don't know.

The frightening thing about Buster Swashbuckle's windmill tilting is you're not quite sure, but he might be on to something.

Scheme Your Way To Top, DPers Told

MINNEAPOLIS – Why aren't data processing people moving into the top management echelons of their companies? Because they don't know how to scheme, to play "the game."

It is important that good scheming accompany good work, Ira S. Gottfried, president of Gottfried Consultants, Inc., told attendees of a DPMA Info/Expo session on "Practical Politics," subtitled "or how to play in the corporate game."

"If you're not a good schemer you will work hard all your life and make a good living, but never make it to the top," he said.

"You may think that if you work very hard, people will recognize the fact and you will be promoted. That's not true," he observed.

"Think of yourself as a marketable product which can be packaged to sell," Gottfried remarked. "First impressions are lasting."

Gottfried provided several hints on self-packaging. Talk management, he said. Don't talk computerese; talk bottom line. Spread your name. Volunteer, but only when you know you can succeed and it will bring you into contact with management.

An honest appraisal of oneself is also a prerequisite to advancement, he noted. An appraisal should include answers to such questions as: Do I fit the environment? Do I honestly want to play "the game" or would I rather go to another company where there are less games? Am I flexible enough to change to fit the management image?

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Random Notes

Cross Assembler for PDP-11 Uses 360 or 370 as 'Host'

NEWTON, Mass. – The MACRP ATI-11 cross assembler from Gould Data Systems is source-compatible with DEC's PDP-11 Macro Assembler, but runs on IBM 360/370 systems.

The program generates symbol cross-reference listings, English diagnostic messages, an expanded set of pseudo-operation codes, and has the ability to copy external source files into the program being created. Object output can be used under DEC's DOS, RSX and RT systems.

The IBM OS and OS/VS version of MACRP-11 is available now for $3,500. The DOS version will be ready in September, a spokesman said from 20 Ossipee Road, 02164.

Cancellation Mistakes Averted by DOS Utility

LYONS, Ill. – IBM 360/370 users operating in multiprogramming mode under DOS may be able to avoid inadvertent cancellation of spooling or other operations that normally require intervention with the Op-Ease-One routine from General Electronics.

The routine changes the "OP60D INTERV REQ xx=cuu" message into a form that is for information only. With it in place, the 1160A READY FOR COMMUNICATIONS message appears immediately, unless the logical transient is in use. An object code version of Op-Ease-One can be purchased for $100, through P.O. Box 79, 60534.

Canadian Net Gets CSTS

DON MILLS, Ont. – Users of the Computer Sciences Canada time-sharing network, east of Winnipeg, are now utilizing the Computer Sciences Teleprocessing System (CSTS) master control software to access the type of computing environment they need to complete a job.

CSTS, developed in the U.S. by Computer Sciences Corp., will be available to western Canadian users later this year, a network spokesman said from 1200 Eglinton Ave. East.

Service Preps Staff Schedules

DECATUR, Ill. – The Staff Activity System (SAS), originally developed on an IBM 1130 to handle professional scheduling for a social service agency, is now available as a service (based on an IBM 370/155) from VanHoudnos Associates.

Tailored to the user's staff size, types of services and client workload, it costs approximately $300/mo to handle 10 full-time staff members and a caseload of about 500. EAch additional staff member will add about $10/mo, VanHoudnos said from 2138 Home Park Ave., 62526.

Standard Assembler? -- Part 2

Overhead Varies With Mapping Choice

By John J. Archer
Special to Computerworld

Having defined the Unisym system, the next step was to map it onto each of the 10 target machines. This effort was split into two areas – the mapping of the virtual machine, and the mapping of the Unisym instructions (including address modes). In general, there are two distinct ways in which these mappings can be performed.

If a user wishes to choose those elements of the Unisym system which closely resemble the corresponding elements on a target machine, then it is best to attempt to map the Unisym registers directly onto corresponding target machine registers.

If a user wishes to use the full power of the Unisym virtual machine and language elements, however, it is best to perform the virtual machine mapping in such a way as to reserve one or more of the target machine registers as working storage for the macros. This would mean that in general there is more simulation of the virtual machine registers in target memories than there is in the first case.

We called these two types of mappings "biased" and "unbiased" respectively.

The way in which these two mappings are performed, and the resultant overheads in user-program storage and execution times produced can best be illustrated by an example: the Digico Micro-16V minicomputer has one accumulator, no index or autoindex registers, a word length of 16 bits, and a paged memory. Its address modes are therefore very limited, but it does have a reasonably comprehensive instruction set (33 instructions).

Consequently, biased mapping for this machine would result in choosing only ACR_1 and a nonpaged memory (it was decided to use this type of memory for both biased and unbiased virtual machines) for the Unisym virtual machine, ACR_1 being represented on the real machine by the sole accumulator. Unbiased mapping would result in dedicating the sole accumulator of the machine as a working register for the macros, and simulating the full set of Unisym registers on page zero of the machine's core memory.

In addition, one could also choose the full set of Unisym elements in biased mapping – this would mean that ACR_2, XR_1, XR_2, etc. would be simulated in memory.

The types of options for the ADD instruction used, when coding in biased Unisym for the Digico Micro-16V would be represented by:

ACR_1 ADD Q

Only the address mode "direct relative" would be used.

It was estimated that when this type of coding was employed, user programs would have storage and execution-time overheads of 17% and 55% respectively on the Digico Micro-16V, as compared with coding the same programs in the machine's assembler language, and there would obviously be no reduction in the number of source code statements produced. However, when the full Unisym virtual machine and language elements were used, under biased mapping, these overheads rose dramatically to 307% and 264% respectively, but with a reduction of 42% in the number of source statements produced.

A study to determine the costs required to make Assembler-level software transportable over a range of minicomputers was recently completed for England's National Computing Centre by Synergy Software Ltd. John Archer was the company's chief design consultant on the project, called Unisym.

When unbiased mapping was used with the full set of Unisym elements, the overheads were found to be 194% and 233% respectively, again with a 42% reduction in source code statements.

What do these figures mean? The 17% and 55% overheads are the cost of having the following extra facilities on the Digico Micro-16V:

- Transportability of software to other machines.
- Direct addressing of all of memory.
- A nonpaged memory.
- Reentrant, relocatable code.

When the full power of Unisym is employed, it is obviously best to choose unbiased mapping. The overheads of 194% and 233% give the above advantages, and also the following advantages:

- Forty-two percent reduction in source code statements, and most probably the same sort of reduction in program testing effort required.
- A higher-level language, together with more operators.
- The use of four registers instead of one.
- The use of 10 address modes instead of one.

It can be seen that for this machine, the gap between biased and unbiased Unisym overheads is enormous, due to the limited architecture of the machine. On machines with more extensive architecture (e.g., DEC PDP-11/45), this gap would diminish to zero, giving low overheads for both biased and unbiased Unisym. The other eight machines gave overhead figures somewhere between these two extremes.

The conclusion of this report will outline the results obtained from the Unisym project.

Max II/III Updated by Modcomp; Round-Robin Task Control Added

FT. LAUDERDALE, Fla. – Greater flexibility of operator communications and improvement in the I/O system and executive services are among the extensions in the Max II/III software planned for delivery in the next three months, according to a spokesman for Modular Computer Systems, Inc. (Modcomp).

Max II/III operating systems are designed for real-time multiprogramming with foreground, "middleground" and background capabilities on Modcomp's line of minicomputers. The latest update also includes support for "round-robin" task execution, core partitioning and multilevel checkpointing, and multiple batch operation, the spokesman added.

The new operator communication task may be placed at any priority level or may be completely deleted if it isn't needed, as in the case of a dedicated, self-contained system that requires no operator intervention.

The enhanced I/O system will integrate process and logical I/O processing and incorporate a disk handler to support "floppy" disks. The impact printer handler will be altered to support serial matrix printers and the teletypewriter handler will support "many types" of unbuffered printers and terminals, Modcomp said.

A spooler for print devices and emulators for the IBM 2780 and CDC 200 terminals permit a Modcomp user to "talk" to other manufacturers' units as if they were simple Modcomp I/O devices, the company noted.

The "round-robin" task execution will allow all tasks at a given priority level to share time on a cyclic basis.

As many as 15 core memory partitions may be specified in addition to the foreground and "middleground" core pools in the new Max versions.

The updated operating system will be distributed automatically with new Modcomp hardware systems. The enhancements will be available to current users "for the cost of the recording media – $50 on magnetic tape, $250 on disk," a Modcomp spokesman said.

The company is at 1650 W. McNab Blvd., 33309.

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Independent Adds Isam Support For PDP-11 Running Under RSTS

NEW YORK – DEC PDP-11 users running under RSTS can have the capabilities of an indexed sequential access method for their files with the Gismo package now available from Gambit Management Strategies, Inc.

The indexed sequential approach allows users to work with a series of contiguous records once a single record has been located through an index search. DEC's Indexed Access Method supports the initial index search but not continuing access to the string of physically related records, a DEC source admitted.

Users can Append Gismo facilities to their Basic-Plus application programs, with parameters in the Append statement defining the limits of the facility to be utilized. Gismo takes less overhead and is no more difficult to use than DEC's IAM, Gambit claimed.

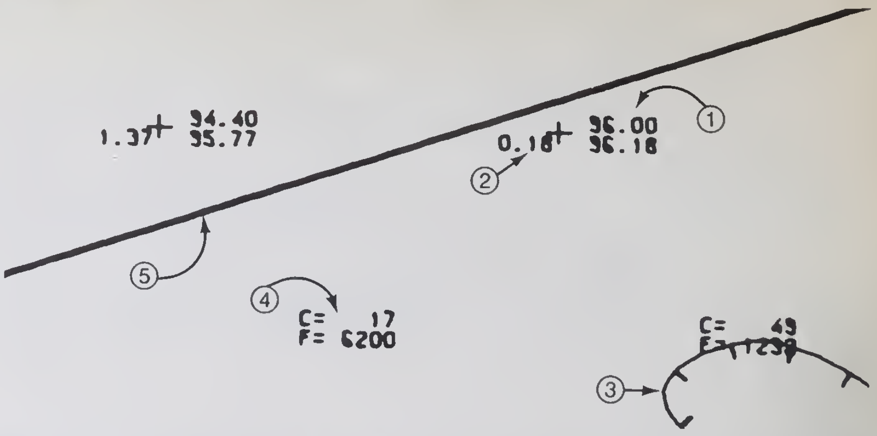
Gismo allows the use of generic keys in addition to absolute values when searching for records.

Facilities available under Gismo, in addition to an Open, include Sequential Read and Random Read instructions. Point, Delete, Update, Get Buffer and Close are also available.

The system takes less overhead than DEC's IAM, Gambit said, noting there is no searching of overflow chains to find newer records. The last record added is accessed as quickly as the first, the company said.

Multiple users are supported concurrently, as long as a minimum of 12K storage is available to each user.

Gismo is being licensed for use on a single CPU for $2,500, a spokesman added from 1440 Broadway, 10018.



Quanta output shows ground elevation over plane elevation (1) and the difference (2) at each plotted observation point (+). Also shown are the "zero line" between cut and fill operations (3), cut and fill volumes within each plotted square (4), and lot boundary lines (5).

'Quanta' Aids Civil Engineers

ENCINO, Calif. – Civil engineers can calculate cut and fill volumes between ground level and design elevations, based on ground data prepared by the Carta contouring package, with the Quanta subroutine now available from Technology Enterprises, Inc.

Said to be more accurate than cut and fill programs based on cross-sections, Quanta works with random data points surveyed on the ground site or digitized from existing contour maps and stored in the Carta files.

The Carta files are transferred to the Quanta system and data on design planes and lot areas is added. Quanta is controlled by a problem-oriented command input method similar to the one used with Carta.

The Fortran-based Carta/Quanta system runs in 8K on an IBM 1130, a 360, 370 or any other system that has a Fortran compiler and a plotter. For the 1130, the Carta/Quanta combination costs $8,000; Carta with both Quanta and Terra costs $11,500.

Technology Enterprises is at 17835 Ventura Blvd., 91316.

Source Librarian Has 3330 Linkage

VALLEY FORGE, Pa. – Additional features and operational efficiencies built into a revised version of the Pulmacs source program librarian package from Management and Computer Services, Inc. (Macs) now give the package power equivalent to that of other better established librarian systems, according to the vendor.

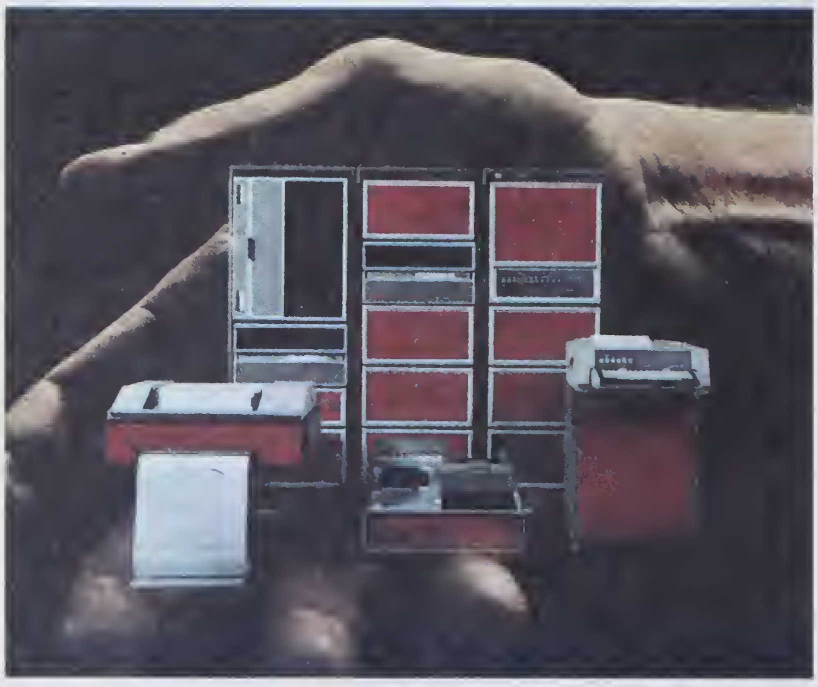
Enhancements have been made in three basic areas: the protection of the programs under the library's control, the peripherals Pulmacs can utilize and the operating system under which it can function, and flexibility of the output created.

Security code processing, including password and user ID capabilities, has been added to prevent unauthorized access to the application programs in the Pulmacs library. The library files can now be stored on IBM 3330 or 3340 disk packs.

Operations under VS operating systems are possible with the new release, Macs said. Meanwhile, output options have been extended to allow multiple formats of the directory printouts.

Concurrent with the enhanced release, Pulmacs will jump $500 in cost to a total of $1,995 as of July 31.

Macs is at 790 Valley Forge Plaza, 19482.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Cobol Preprocessor Includes Shorthand, Macros

COLUMBUS, Ohio – IBM 360 or 370 users with a 54K partition and a direct access device have another Cobol preprocessor to consider, with the availability of NSCOB from National Scanning, Inc.

NSCOB, in common with several other preprocessors, supports the use of abbreviations or "shorthand" notations for data names, editing pictures, literals or full statements. A stored library of common abbreviations can be supplemented by coding forms that are unique to a given programmer, as long as these additions are defined before they are used.

Data Division coding is extremely abbreviated under NSCOB, a National spokesman said, noting that in addition to short form data names and PICTUREs, the user can show record level number, usage, OCCURS clauses and REDEFINES entries in cryptic form as well. In effect, the tedious repetitive coding in this division is eliminated, and the user is free to concentrate on his program logic, the vendor added.

A Macro language facility is available under NSCOB and this includes an ability to generate code which is inserted in other parts of the Procedure Division or in other divisions within the program being created. Data Division file descriptions, Working Storage entries and Select statements, for example, can all be generated from macros.

How great an expansion of coding is generated by the macro Call depends, National added, on the occurrence or omission of parameters or parameter values in the Call. Thus the user need not be responsible for creating more code than he needs.

The macro facility is designed to provide the ability to code applications, rather than just programs. While National supplies a set of prepared macros, it also supports user development of any others that meet his needs.

The NSCOB package includes – in addition to the initial macro library – source code (Cobol) for the preprocessor itself, programs needed to maintain the macro and abbreviation libraries, programmer and system documentation and sample programs. It can be acquired for a one-time license fee of $3,500 from P.O. Drawer 5946, 921 Chatham Lane, 43221.

Papers Sought For APL75

PISA, Italy – APL75, an international congress for those involved in development, implementation and use of APL, will be held a year from now at the University of Pisa, June 11-13, 1975.

The official language of the congress is English, a spokesman noted. Papers are invited in all areas related to APL, and all papers will be Ramisstrasse referred, according to local coordinator Stefano Trumpy.

Deadline for submission of papers is now set for Oct. 1. Rules for submission of papers are available from Hans R. Haegi, technical coordinator, Literargymnasium Zurichberg, Ramisstrasse 56, 8001 Zurich, Switzerland.

Registration forms are available from Trumpy at CNUCE, Via S. Maria, 36, 56100 Pisa, Italy.

Manual Teaches 'Hex' Concepts

MARSHALLTOWN, Iowa – Programmer trainees can gain a basic working knowledge of the number scheme used in IBM 360/370 and various other computer systems through *Understanding Hexadecimal Notation*, a 16-page programmed instruction manual available free of charge from the Education Center, Fisher Controls Co., in Marshalltown, 50158.

The "course" breaks the hexadecimal concept into 63 frames or segments of information, each of which should be mastered through correct fill-ins before the student goes on.

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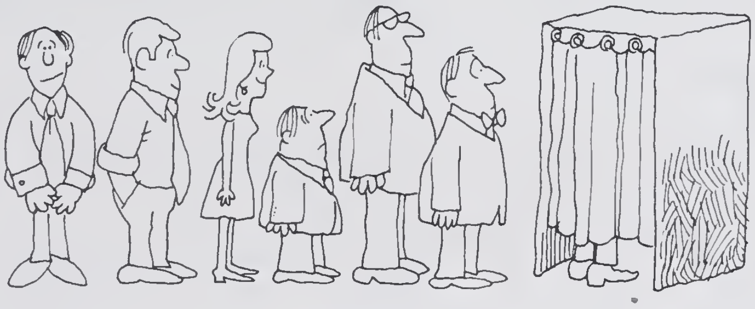

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– Optimum file organization and indexing techniques.
– The problems of data assurance and the techniques for resolving them.
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We selected this seminar for possible inclusion in the EDP Seminar Series after watching it in action. It was developed by Performance Development Corporation under the direction of its President, Leo J. Cohen, a nationally known consultant in data base systems. Mr. Cohen will continue as seminar director, and the seminar leaders are PDC staff who are experts in their own right. They include Alan Stutz and Steve Robinson, both of whom are well-known for their work in this area. All instructional staff have been involved in design and implementation of a variety of data base systems for major U. S. companies.

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Honeywell Adds 716 Mini-Based Remote Processors

By Ronald A. Frank
Of the CW Staff

WELLESLEY HILLS, Mass. – Honeywell has added 716 minicomputer-based remote network processors to its Datanet 700 communications series.

The RCP 701 and 707 are designed to perform batch processing or message concentration at remote sites and can operate on-line with most large HIS mainframe systems.

The Model 701 provides single job stream remote batch and remote job entry in conjunction with 6600/355 front-end processors, on the Series 60 level 66 or Series 6000 central systems.

The 701 includes a 300 line/min printer, 400 card/min reader, console, communications controller and 8K of memory for "less than $1,000/mo." The new configuration uses a 1 µsec version of the 716 mini compared with the earlier 702 which has a 750 nsec version. It is described as 15% to 20% less than the 702 with increased performance.

The 707 operates with the 6600/355 and the same large mainframes compatible with the 701, but it includes interleaved concurrent I/O handling up to eight peripheral devices. In addition to the 701 peripherals, the 707 is compatible with disks, paper tape and most mini peripherals available from HIS. The 707 costs about 25% more than the 701 and prices range from $1,200/mo to $6,000/mo depending on configuration, a spokesman said.

Also added was the Datanet 7360 remote job entry system, which is described as a foreground/background scheduling system that can interface with 360/370 systems operating under Hasp II. Using binary synchronous format, users can submit OS/MFT or MVT job streams to the host CPU with executed jobs transmitted back to the remote terminal system.

The 7360 operates on either full- or half-duplex lines at speeds from 2,000 bit/sec up with a 400-character transmission block. Prices range from $1,500- to $2,500/mo depending on configuration.

Honeywell also announced the establishment of a network of Mini-Net data centers to provide customer support and development. Each center will have the capability to demonstrate batch operations and will have remote network processors communicating with HIS and IBM mainframes. Customer support through configuration of systems and media transfer, program development and software training will be available at the centers for customers who use HIS minis, the firm said.

Installations have been completed in New York, Massachusetts, Phoenix and McLean, Va. Additional centers are planned in Chicago, Atlanta, Los Angeles, San Francisco and Minneapolis, the company said. All centers will utilize the 700 series minis.

Incoterm Units Tied to Burroughs CPU

CRTs Track Multidepartmental Hospital Records

By Patrick Ward
Of the CW Staff

MEMPHIS – Hospital departments range from radiology labs and pharmacies to accounting offices and admitting rooms. If a hospital wants to tie all those users into a patient history data base, the choice of the proper terminal becomes a critical factor.

Methodist Hospitals here chose programmable CRT units to go with its integrated patient data base because the displays are flexible enough to serve users in such widely different applications areas, according to Neil Douglas, director of information systems.

The hospital now uses 71 Incoterm SPD 10/20 displays, with the first installed in 1971, for admissions, medical records, personnel, out-patient registration, and accounting, nursing and pharmacy applications.

With one vendor serving this broad range of users, the hospital gets "one set of hardware, one line discipline and one set of field engineers," Douglas pointed out.

Another reason for intelligent terminals was the chance to diminish the processing burden on the central mainframe, Douglas said, adding he is not sure if it has or has not, since the hospital has not had other equipment to compare against the intelligent terminals.

The hospital considered Datapoint equipment, Douglas said, but found its cost was higher, primarily because of the dual cassettes on the system, which the hospital did not need.

Douglas said he also looked at Sycor gear, but found its programming capability was more suited to formatting and editing. It was also not as flexible in terms of line discipline, use of function keys "and the full range of things you might want to do," he added.

Douglas said the hospital does a lot of programming of the intelligent terminals.

"We have an Assembler that runs on our Burroughs mainframe and accepts source code and produces object language on disk," he said.

In almost all cases, the CPU transmits the program directly on-line to the terminal, he noted.

Debugging, he added, is fairly difficult.

Satellite Beds

The Methodist Hospitals actually consists of a 1,000 bed main unit and a 174-bed satellite hospital. The satellite hospital's 22 CRTs communicate with two Incoterm multiplexers, which transmit over two 4,800 bit/sec private lines using Bell 208 modems.

The 49 displays in the larger hospital communicate directly with a 240K Burroughs B3500 or a 200K Burroughs B3700, both with Burroughs multiline control units.

The principal reason for the two mainframes is backup, Douglas said. The hospital can run its total on-line workload in either machine, leaving the remaining one to handle other tasks.

The mainframe doing real-time work accesses 160M bytes of Burroughs head-per-track disk. Other peripherals include four disk pack drives with a 240M-byte capacity, four tape drives, two card readers and a printer.

The hospital ties together its integrated patient records with a homegrown real-time file handler which has proven "very satisfactory," Douglas said.

With this integrated system, Douglas noted, "more people in the hospital know what's happening on a current and timely basis." The major problem in a hospital is assimilating a vast amount of information and distributing it to those who need it, he said.

The integrated system also reduces the amount of redundant information collected and saves on clerical time, Douglas noted.

Functions Divided

Douglas said his goal of an integrated patient data base is about 60% achieved in the satellite hospital which is the testing ground for new medical applications, while the larger hospital concentrates on operational and organizational applications.

Thus, in the satellite hospital, pharmacists, dieticians, nurses and other staff members can quickly check a patient's record to determine his allergies, for example, and more applications like this are planned.

Terminal location codes guard access to the on-line system, Dougals said. He added that the hospital is also interested in using badge readers.

The Incoterm terminals' reliability comes up to expectations, Douglas said. "I think we were the first real order they had," he recalled. "We had trouble at the time – which you could probably expect," he added.

The 71 Incoterm displays and 57 controllers, some on a three-year and some on five-year leases, cost the hospital $7,100/mo without maintenance,. Douglas noted.

N.C. Ban Exempts Terminals

RALEIGH, N.C. – The North Carolina Utilities Commission has now proposed that computer-related equipment be exempt from its impending ban on the connection of noncarrier equipment.

The commission originally suggested last year that all intrastate customer-provided equipment should be banned from connection to telephone company lines.

The decision to exclude data communications equipment apparently was included in the proposal because phone companies do not normally offer terminal equipment, a commission staff spokesman said.

May Interconnect

The new proposal states that "computers, data transmitting and receiving terminals . . . or other nonvoice communications equipment not usually offered for service by a telephone company . . . may be interconnected with the system of any public utility telephone company operating in this state under duly approved tariffs."

The proposed regulation would take effect on July 1, 1975. Hearings on the proposal are scheduled to resume Jan. 7, 1975. It was not clear whether the proposal would allow the interconnection of modems for intrastate service.

WUI Tests IDDS

NEW YORK – The FCC has authorized Western Union International (WUI) to test its International Digital Data Service (IDDS) between New York and Paris on July 9 and 10.

Described as the "first intercontinental transmission of digital data over simultaneous satellite and undersea cable paths," the test will include two IBM 2780 terminals operating at 2,400 bit/sec.

WUI has proposed IDDS as an international offering to serve computer communications users.

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POS Family Includes Recorder, Transmission Unit, Controller

MAYNARD, Mass. – A family of point-of-sale (POS) systems designed specifically for large and small supermarkets, fast-food and retail chains is now available from Data Terminal Systems, Inc. (DTS).

The family includes a store-and-forward recorder that captures all register transactions on magnetic tape; Ans-R-Tran, which permits unattended transmission of data to a remote data processing center; a register controller for stores with multiple register data capture and transmission requirements; and a store controller that provides automatic price lookup and account authorization.

The store-and-forward recorder captures up to 1,000 lines of register transaction data. Management in a remote location can maintain better control over dispersed stores, the firm said, because the store-and-forward capability provides them with the information they need to determine reorder quantities, profit margins and slow-moving items.

By Mail or Phone

Once daily transactions are captured on magnetic tape, local stores can either mail the tape cartridge to the home office, or the system can be expanded to include Ans-R-Tran for automatic data transmission over ordinary telephone lines. Depending on the number of lines stored, store-and-forward recorders range in price from $800 to $1,075; the Ans-R-Tran option costs $450.

For stores with information requirements exceeding 1,000 lines of data, a register controller with magnetic tape recorder provides automatic transmission of up to 60,000 lines of register tape information.

Linking as many as 16 registers, register controllers capture all data printed on the register detail tape as well as class information like stock numbers, payroll information and subtotals. A typical three-lane register controller system is available for under $14,000 complete, including Dacap electronic cash registers. Excluding Dacaps, prices on register controller systems range from $1,395 to $4,895.

Any DTS POS system can be upgraded to include automatic price lookup and account authorization by adding a store controller.

Stores can have a full five-lane automatic front-end system including a store controller, five Dacap registers, five slot scanners, a 2000-item file, summary store reports data transmission and magnetic tape recorder for less than $50,000, the company said.

Data Terminal Systems is at 124 Acton St., 01754.

'Magstripe' Card Reader Handles Variable Formats

TORRANCE, Calif. – American Magnetics Corp. has an OEM portable magnetic stripe card reader – the Magstripe card reader Model 10 – that reads encoded information in any combination American Banking Association (ABA), International Air Transport Association (IATA) or Thrift Institutions (Thrift) stripe formats. The typical read cycle time is two seconds. The Model 10 is manually operated, needing no power lines.

The reader is designed to fit inside a data terminal housing. It is priced at $150 in quantities of 100 from 2424 Carson St., 90501.

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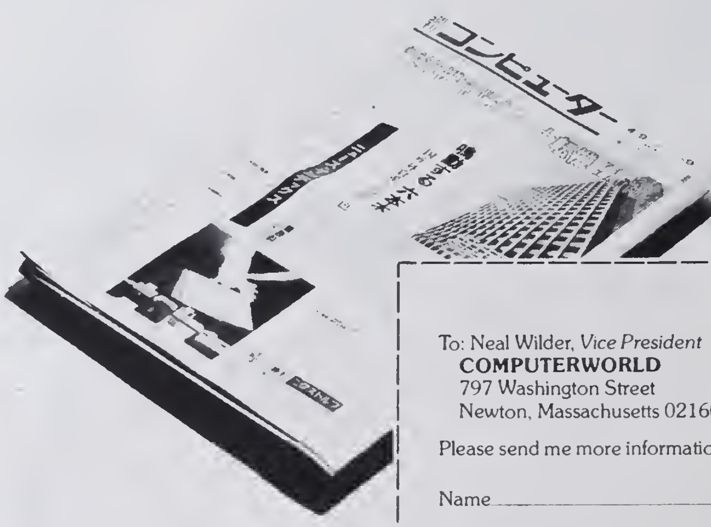

In Japanese it's called *Shukan Computer*, and in English, it means "Computer Weekly." Whatever you call it, *Computerworld*'s new sister publication is an excellent vehicle for selling EDP products and services in the large and expanding Japanese EDP market. Here are some of the reasons why:

- **Shukan Computer** is a joint venture of *Computerworld* and Dempa Publications, the leading Japanese publisher of electronics information services. With the combined resources of the two companies, Shukan has the largest news gathering organization of its kind in the world
- **Shukan Computer** is the only newsweekly for the fast-growing Japanese computer community
- Initial circulation is guaranteed at 35,000, divided about 80% to end-users and 20% to the computer industry. Circulation development methods currently under way are the same as those which gave *Computerworld* the highest paid circulation in its field in less than four years
- **Shukan** lets you in on the action in the world's fastest growing EDP market. The Japanese Ministry of International Trade and Industry (MITI) has made the following 1976 forecast: 39,000 general-purpose systems installed, up from 11,237 in 1971, 11,000 minicomputers installed, up from 1,670 in 1971, and 3,000 industrial systems installed, up from 1,086 in 1971.
- Is this growth likely? The latest census of general-purpose systems revealed that there were 14,806 systems installed as of September 1972, a one year gain of 3,569 units and $911 million installed value, a growth of 31.7% and 23.1% respectively. And more than 50% of these new systems were American made.
- It is true that there are import restrictions. But Japanese vendors and users can get permission to import almost anything they want and need. As a result, 1972 imports were over $360 million.
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IBM 3270-Compatible Terminal Transmits Up to 9,600 Bit/Sec

BOHEMIA, N.Y. – Megadata Computer and Communications Corp. has introduced a line of IBM 3270-compatible intelligent CRT terminals aimed at the remote terminal user.

Called the SIR-1075/77, the terminal can transmit at up to 9,600 bit/sec, compared with the 4,800 bit/sec limit of the IBM 3270, a Megadata spokesman said.

The terminal is available with up to 4K 12-bit characters in programmable read-only memory and 16K of read-only memory back buffer storage.

Dual cassette and a floppy disk are options. Both 1,920- and 2,160- character screens are available.

The terminal costs from $5,000 to $6,000 depending on customer requirements, a Megadata spokesman said. He estimated lease cost, through a third-party lessor, at $199/mo, not including maintenance.

Delivery is 90 to 120 days from the firm at 35 Orville Drive, 11716.

Bell Begins Construction On Millimeter Waveguide

NEW YORK – The Bell System has begun construction of its first millimeter waveguide transmission system along an eight-mile route in Morris County, N.J.

An outer protective sheath will first be buried four feet underground and later the copper-lined waveguide tube will be inserted. First tests on the system will take place late this year.

Current plans call for the link to be extended to 20 miles in 1975. The link now being constructed will be part of a north/south waveguide system expected to go into commercial operation in the 1980s, AT&T said.

Decscope Interaction

MARLBORO, Mass. – The VT50 Decscope from Digital Equipment Corp. is an OEM interactive video terminal with integrated hard-copy output capability, which will sell for under $950 in 100-unit lots.

The VT50 Decscope incorporates an Ansi-standard keyboard and a 12-line 80-column CRT display format with a high intensity screen that can reportedly be filled in less than one second. Hard copy can be provided in a line-by-line or page mode.

First delivery is scheduled for April 1975.

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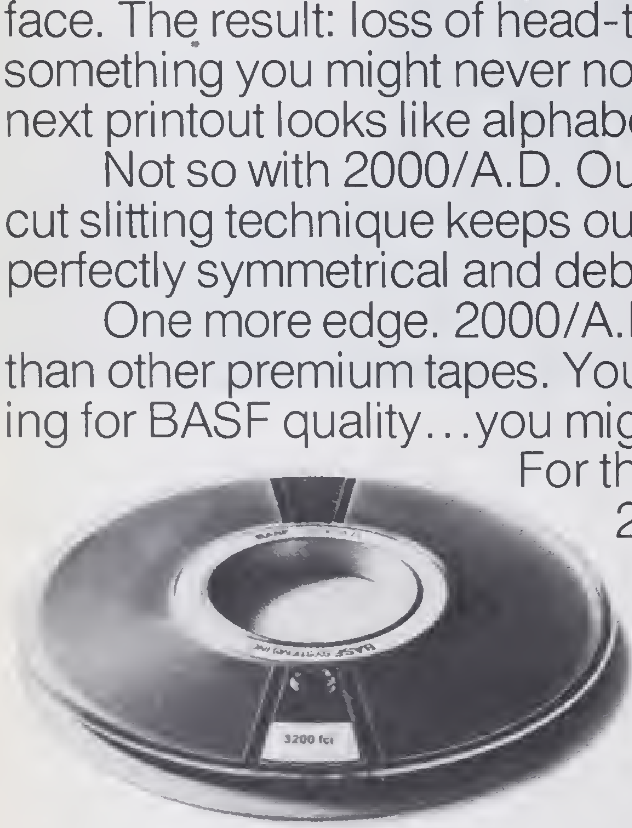

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Bank to 'Cash In' on NCR On-Line Teller Terminals

By Patrick Ward
Of the CW Staff

DAYTON, Ohio – Increased teller productivity, improved security and better customer service are the benefits the Winters National Bank & Trust Co. expects from installing on-line teller terminals.

Winters has ordered 241 NCR 279 teller terminals, costing about $750,000, with installation to begin in the fourth quarter of this year in all the bank's 25 branches.

Use of the terminals also ties in with the bank's plans to adopt the customer integrated and/or reference file system (Cirf) from EDP Corp. of Sarasota, Fla. Winters' vice-president and cashier, Robert M. Patrick, commented that he thinks that firm has by far the best customer information file (CIF) software available.

In justifying the terminals' expense, Patrick explained that "one of the big problems in banks . . . is optimizing the service you give a customer via a teller."

"We're very interested in providing a very, very efficient teller environment," Patrick said. The NCR 279 "gives us a fantastic leap forward" over the NCR 41 mechanical teller machines presently installed. "We will program the software so that 80% to 90% of the teller's inquiry needs will be handled by the terminal at the window," he estimated.

In check cashing, Patrick noted, the teller will call up an account on the terminal's LED display and find the net amount in the customer's balance as of the previous day. The same procedure will follow with other types of customer relationships, he added.

One limitation of the 279, he explained, is that the information will be in one line of numerics with only a simple alpha code to tell the teller how to handle a situation.

The bank will have the capability for, and is working toward, an on-line update system, Patrick mentioned, "but that's several years down the road. We've got to take this thing in bites that are gulpable, if you will," he said.

Although the terminals will be initially used for inquiry, the system software will have the capability for "memo-holds" and "stops" on an account, which will be dropped at the end of the day as transactions are processed through an NCR Century 300 at the central site.

Patrick said he expects the transition from the present teller machines will be "very efficient" and will not require a great deal of staff retraining.

He added that the bank looked at a variety of different terminals and even reevaluated its policy of using teller terminals before settling on the 279.

Another advantage of this type of terminal, he mentioned, is that it makes end-of-the-day balancing easier, which pleases bank employees.

Patrick said the bank will run up an incremental cost from replacing its teller machines with the on-line terminals now, instead of later in the decade.

But the fact that tellers will be able to use the 279 for 90% of their tasks is important from both the cost and the customer service standpoints, he stated.

Customers don't like to see their teller leave his or her station and queue at some other device, Patrick observed, even if handling the business at the teller window would not be any faster.

Actually, though, Patrick said, the bank expects to reduce inquiry time by at least 70%.

"So we feel the machine will more than pay for itself over the next eight years, coupled with many of the other things we're doing," he said.

One of these goals is a central information file concept for single-statement banking.

With a thermal printer in each of its branches, the banker handling a customer loan application could then obtain a complete history of the customer's relationship with the bank, including whatever credit information is in the file, Patrick noted.

EDP Corp. has developed an "Alpha Locator" which will make the Cirf system "highly responsive to minimum information," he said.

For example, a customer who did not know his account number could give the first three letters of his last name and the street number to a bank staff member, who would enter the data through a terminal. The computer system would then search out his account, or a small group of possibilities, and list them on the printer.

Patrick said his bank expects to have the NCR 279s ready for on-line inquiries in January 1975, with the complete integrated file ready by the second quarter.

American Satellite Rates Cut

GERMANTOWN, Md. – American Satellite Corp. has reduced rates for domestic voice-grade channels up to 15% for its service scheduled to begin operation in July.

A New York to Los Angeles channel will cost $1,000/mo, while a Dallas to New York facility will be priced at $750, the company said. Local loop charges have been reduced from $60 at each end to $25, and customer interface cost will be $35, down from $40.

Comparable discounts for groups of channels will be available. American Satellite is at 20030 Century Blvd., 20767.

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Bits & Pieces

Bell & Howell RPS 350 Combines OCR, Keyboard

CHICAGO – The RPS 350 from Bell & Howell utilizes both optical character recognition and keyboard input to record and balance individual remittances. In doing so, the unit provides an audit trail to simplify rechecking in answer to customer queries or to reconcile accounts, the firm noted.

The system also can encode payment checks in magnetic ink, microfilm the checks and payment stubs and provide magnetic tape and printer output for bank deposits and customer record updating.

The RPS 350 can be used as a standalone system or a cluster of terminals can be supported by a central controller. A one-station system rents at about $2,000/mo. The firm is at 6800 McCormick Road, 60645.

Data Disc Fixed-Head Disk Offers 19.2M Bits, 3,600 Rev/Min

SUNNYVALE, Calif. – The 8400 Series of fixed-head disk memories from Data Disc, Inc. offers capacities of 19.2M bits at a rotational speed of 3,600 rev/min.

The series has built-in daisy chain capability, read/write electronics, speeds of either 3,600 or 1,800 rev/min and format flexibility. A write lockout option protects data in increments of eight tracks and may be field installed.

The 19.2M-bit unit, priced at $5,200 and interfaced for the Data General Nova series and DEC PDP-11 minicomputers, should be available within six months, according to the firm.

Data Disc is at 686 W. Maude Ave., 94086.

OCR Unit Composes Type Copy At 1,000 Char./Sec for $29,900

SUNNYVALE, Calif. – The OCR/Comp from Dest Data Corp. reads documents having 10 pitch fonts at rates up to 1,000 char./sec and interfaces directly to a phototypesetter.

Standard readable fonts are Courier 12, OCR A and OCR B. The basic unit sells for $29,900 from the firm at 1285 Forgewood Ave., 94086.

Printec-100 Matched to HP 9830A

WOBURN, Mass. – Printer Technology has interfaced its Printec-100 serial impact printer to the HP 9830A programmable calculator through the HP serial I/O interface, Model 11205A.

The printer yields an average throughput for 132-column lines of 35 line/min. Adjustable tractors enable the printer to handle any paper width from four in. to 14-7/8 in. The printer, including interface, is priced at $3,145 from the firm at Sixth Road, Woburn Industrial Park, 01801.

Kiviat Display, Options Added to Tesdata Monitor

By Vic Farmer
Of the CW Staff

MCLEAN, Va. – Tesdata Systems Corp. has incorporated the Kiviat system profile display as a standard feature in its 1185, and new 1186 and 1286 hardware monitors.

The Kiviat display is a technique of graphically displaying computer performance or utilization data in real-time on a CRT display. The technique was originally devised by Philip J. Kiviat, technical director of the Federal Computer Performance and Simulation Center.

The system profile format has eight axes all originating at the center of the CRT screen. Performance data is displayed in the form of vectors and the length of each vector shows the percentage utilization. The center of the display, for example, represents 0% utilization and full vector extension is 100%.

The vectors spring out from the center in eight compass headings (N, NE, E, SE, S, SW, W, NW) with individual vector lengths determining quality or magnitude. The data is presented so there are four "desirable" directions and four "undesirable" directions. The four desirable items are displayed in a vertical/horizontal cross formation, and the four undesirable items are displayed in the directions of the four corners of the CRT display (45 degrees from the cross).

The standard system profile plots the following data:

North – CPU busy.

Northeast – CPU busy and no channnel busy.

East – CPU busy and any channel busy.

Southeast – CPU not busy and any channel busy.

South – Any channel busy.

Southwest – CPU not busy.

West – CPU busy in problem state.

Northwest – CPU busy in supervisor state.

If a system were operating ideally, the data would appear as a fully extended cross of N-S and E-W lines with no 45-degree lines.

The production of this graph uses about one-eighth of the 1185 measurement data gathering resources, according to Tesdata. The graph is written on the system's alphanumeric CRT from a 9,600 bit/sec line using cursor positioning. The display can be updated in half a second.

In the accumulative mode, the system profile can be set up to display cumulative data over a computer shift. Each refresh of the screen will update the percentages cumulatively, the company explained.

In the optional short-time mode, the profile represents performance information over a chosen time frame such as 10 seconds so the impact of the current workload can be viewed. Data used for the display can be put on tape for further analysis.

The 1186 system provides an additional 2.5M-byte disk drive and Tesdata's disk operating system with which a user can modify or enhance existing 1185 measurement software.

System and utility modules provided with the operating software include source program editor, Assembly language, loader, debug media-to-media file and conversion, object library update program, and tape library preparation and maintenance programs.

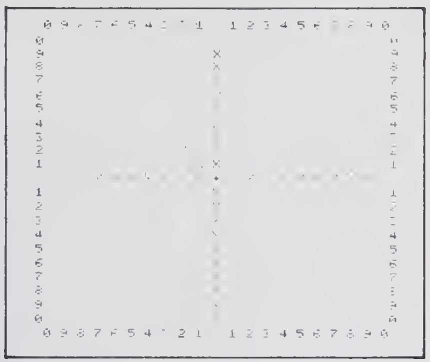
The Model 1286 additionally provides a conversational batch analyzer for reduction of measurement data. This feature allows the measurement reports to be completely independent of the host computer, the firm added.

Additional options allow expanded disk capacity to 10M bytes and high- or low-speed printers.

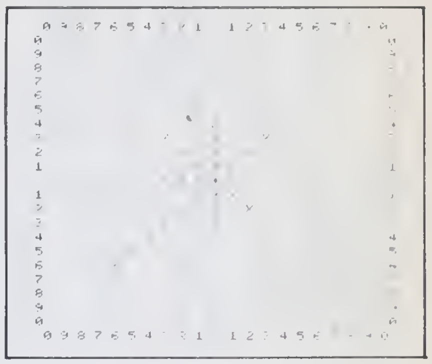
Prices for the 1185 range from $62,000 to $89,000 with one-year leases starting at $3,100/mo.

The 1186 is $106,000 and the 1286 is $111,000.

The firm is at 7900 Westpark Drive, 22101.



Nearly Balanced Test Display



Wait-Leg Imbalance Test Display

Power Monitor Goes 'Foreign'

MENLO PARK, Calif. – The Model 3401 power line disturbance monitor from Programmed Power, Inc. is switch-selectable to monitor international 50 Hz power sources in addition to 60Hz.

When a preset level is exceeded, the disturbance is detected, categorized and logged. Prices start at $4,100. The firm is at 141 Jefferson Drive, 94015.

Honeywell Reprices System 700

WELLESLEY, Mass. – Honeywell has restructured the pricing of its System 700 minicomputer in addition to announcing a low-cost memory, card reader and line printer.

The basic difference in the repricing is that the Model 725 is offered with separately priced software and support, while the Model 735 is a fully bundled product.

Features of the System 700 computers allow them to be used as part of a distributive processing network in conjunction with host processors, such as Honeywell's Series 2000, 6000 and Series 60, as well as some competitive systems.

The self-contained table-top card readers handle 300 card/min. These new readers, Type 5151 and 5152, interface to the 716 central processor by means of a single board controller. Both types utilize photoelectric data sensing.

The 5151 reads 80-column Hollerith or binary-punched cards; the 5152 reads 80-column punched and 40- and 80-column mark sense cards. Weighing 35 pounds, the readers have hopper and stacker capacities of 500 cards. Prices begin at $4,350.

Two new printers for the System 700 offer 136-column printing with up to 300 line/min and provide for vertical spacing of six- or eight col/in. Type 5551 prints 240 line/min, using 96-character upper- and lower-case Ascii-type set. Type 5552 prints 300 line/min with standard 64-character Ascii set. Prices begin at $13,000.

Signature Imprinter Locks Up

NIAGARA FALLS, N.Y. – Users seeking a degree of security when imprinting signatures on computer-generated checks can try a self-standing imprinter from Moore Business Forms, Inc.

An automatic device locks the imprinting shaft in a nonoperating position when not in use, and the shaft cannot be released until the front cover is unlocked. In addition, a tumbler lock in the front cover activates two steel rods which lock the cover at two edges. For further security, imprint plates can be removed for storage in vaults or safes when not in use.

The self-standing imprinter will accommodate one-part continuous forms from four in. to 16 in. wide and from 2-5/6 in. to 8-1/2 in. deep.

Over 250 checks of 3-1/2 in. depths can be imprinted per minute in the unit.

The imprinter is priced at $1,026 from the firm at 1001 Buffalo Ave., 14302.

The 8100. Have a painless disk operation.

Remote-site data entry operations that depend wholly on mainframe processing can be painful and costly. Sanders' intelligent 8100 Remote Batch Terminal System can offer quick relief. With its 5-million-byte disk storage and IN-FORM software, it can function off line as a virtually self-contained computer system using CRT's. It simplifies, controls, standardizes, improves turnaround time, reduces labor needs. From the leading company in the distributed data processing field with total hardware, software and maintenance resources. Sanders Data Systems, Inc., Daniel Webster Highway-South, Nashua, N.H. 03060. Call (603) 885-3727.

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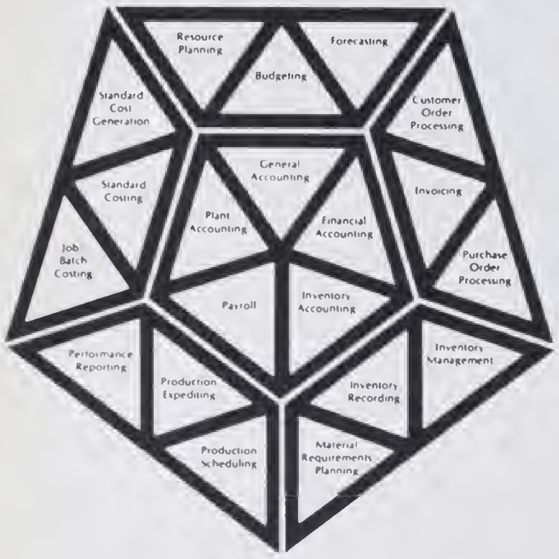

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MARTIN MARIETTA

Reduces File Storage

Microfiche Halves Hospital's DP Costs

By Vic Farmer
Of the CW Staff

RICHMOND, Va. – A 1,000-bed hospital's computer costs were cut nearly in half recently when it began receiving its reports on microfiche.

The Medical College of Virginia Hospitals use Shared Medical Systems, a service bureau located in King of Prussia, Pa., for its computer work. When the bureau began converting computer tape output to microfiche for many of its more than 130 customers, the hospitals were able to save through lower costs and reduced file storage requirements.

In three months the price reduction paid for 10 readers purchased by the Medical College.

"Every Monday morning we used to receive 15 to 16 cases of paper reports," said Forrest E. Perrin Jr., DP manager in the hospital's business office. "One report, the aged trial balance, regularly was 1,800 pages long. Reduced to microfiche, the report is now delivered on 10 pieces of film."

More Reports Possible

But with the reduced size of output medium, the hospital found it could easily take advantage of additional reports such as accounts receivable activity, revenue journal, list of charges and credits posted, outpatient locator file and general ledger activity report. These reports average about five microfiche a day.

Perrin found acceptance of the microfiche was high. The fifth and sixth carbon of a paper report became difficult to read and use, he said, and the people in the business office found the large books difficult to lift and handle. "The book you're looking for usually is on the bottom of the pile."

Five readers in the collection department are each located adjacent to a group responsible for a portion of the alphabet. The readers are also used to handle inquiries on bills and account status.

Accounting clerks became accustomed to using the readers in less than a week and today the answer is a universal "no," when asked if they would prefer paper reports, Perrin said.

Enthusiasm for COM

Back at Shared Medical Systems, Phillip D. Jackson, manager, consulting, has other reasons for being enthusiastic about COM.

"By building a data base from cost entries, we can provide clients with many options for sophisticated statistical and financial reports.

"In fact our output potential is so vast that it caused problems in itself. In many cases we were literally burying hospitals under computer reports that were virtually impossible to access and store efficiently."

Shared Medical Systems uses a Kodak KOM-80 microfilmer capable of producing up to 18,000 page images an hour, the equivalent of printing a 500-page report in a minute.

The unit reduces computer output 42 times so 208 pages can be copied onto a 4 in. by 6 in. microfiche.

One of the pages on each microfiche is an index frame.

Of the many COM benefits, Jackson stressed the elimination of the problem of rising cost of paper, including computer printout forms.

Cost of Paper Up

The cost of paper went up by about 12% in six months, he said. Shipping costs were also quite reduced in the decreased weight and bulk of microfiche.

The service bureau's real cost advantages, however, come in other areas.

"We had four to five computer impact printers totally dedicated to producing copies of reports for distribution to hospitals," Jackson said.

"Our output from these machines was tremendous and it all had to be decollated.

"With microfiche we are able to make diazo copies inexpensively and, of course, there is no collating to do," he added.

The real benefits to hospitals, however, begin when they receive the microfiche.

"We can use our own experience as an example," said Jackson. "The customer service department makes a diazo of every microfiche, which we maintain for reference and storage purposes. When we kept these files in printout format, they occupied more than 1,200 sq ft of storage space spread over four locations. Today, we have those same records in a filing cabinet nine sq ft.

"In addition, it used to take us about 16 hours a day filing printout, as compared with less than an hour to file our microfiche," he added.

"Generating this information in familiar form takes only another few seconds. It is achieved by copying the forms customers want us to use on glass form slides, which can be interchanged easily in the COM device," said Jackson. The image on the slide is superimposed on the data displayed on a CRT, and this is what is copied onto microfilm.

Once the film is exposed, the magazine is loaded onto a Kodak Versamat film processor, Model 75. This machine is set up for halide reversal processing – an option Shared Medical chose – which produces negative-appearing film images at high speeds.

"We chose this option because we think it is easier on the eyes," Jackson said. "This is especially important when someone is going to be reading microfiche several hours daily.

Advertisements, Text Composed On CRT Screen

WAYLAND, Mass. – The Raycomp-100 system from Raytheon provides a way to lay out and compose advertisements and other printed matter on a CRT screen.

In use, an operator enters advertisement content or text material into the system by means of a keyboard, paper tape or magnetic tape. An overlay grid, indicating dimensions of the advertisement or text, is then called up and displayed on the screen.

Material is called up in sections and type faces and sizes selected through the keyboard. The material is manipulated, changed, edited, corrected and finally positioned by the operator.

Once composed, the material can be sent from the system to text editing or phototypesetting by means of paper punch tape or by the optional magnetic tape output unit.

The system consists of three major elements: a terminal control unit (TCU), a common logic unit (CLU) and up to four workstations. This configuration is priced at $200,000.

Raytheon Equipment Division is at Boston Post Road, 01778.

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British Investigating Plan For Signature Verification

LONDON – The British are investigating the feasibility of automatic verification of signatures and are seeking input from potential users of such systems or interested manufacturers.

This experimental project was initiated recently by the Inter-Bank Research Organization with the joint support of the National Physical Laboratory (NPL) and the National Research Development Corp. The equipment being used consists basically of a computer-linked writing tablet called 'Datapad,' designed by NPL and manufactured by Quest Automation Ltd. Software for the system is being developed by NPL.

The approach being adopted toward signature verification utilizes not only the shape of the signature but also the "rhythm" with which it is written. It is believed this approach offers a cheap, effective and familiar method of automatic identification capable of dealing with a large population.

In practice, users of any system incorporating automatic signature verification would provisionally identify themselves at a terminal by means of a machine-readable card or by keying in their names; they would then support this by signing a document presented to them upon a device containing an "electro-sensitive" writing surface.

This device would be connected to a computer network so that the person's signature could be immediately and automatically verified.

Possible areas of application for automatic signature verification include automated banking services, control of access to premises and information, and control of the issue of drugs, dangerous chemicals and other substances.

Information coordinator is P.L. Hawkes, Computer and Automation Group, National Research Development, Kingsgate House, 66 Victoria St., London SW1.

Off-Line Tester Evaluates Disks

FULLERTON, Calif. – An off-line tester for evaluating and exercising fixed and removable media disk drives is available from Wilson Laboratories, Inc.

The RMX-2000 disc exerciser was designed to test and exercise IBM 2311, 2315 and 5440-type compatible disk drives manufactured by Wangco, Century Data, Diablo and Pertec, as well as a number of floppy disk drives.

The RMX-2000 is built around an Intel microcomputer chip, which is mated to a minicomputer-type disk formatter.

Tests available range from simple continuous "restore" operations through complex data exercises. The data tests vary from unformatted patterns to formatted data transfers including preamble, header, data block, 16-bit polynominal CRC check character and postamble.

The complete RMX-2000, including cable and standard programmed read-only memory is priced under $2,500.

The firm is at 2536-D E. Fender Ave., 92631.

Fabri-Tek Core Memory Replaces Drum Unit On GE 4010, 4020

MINNEAPOLIS – Fabri-Tek, Inc. has introduced a plug-compatible core memory replacement for the rotating drum memory used with GE-PAC 4010 and 4020 computers.

Each 500K 25-bit-word unit is priced at $9,100 from the firm at 5901 S. County Road 18, 55436.

TI Adds 4K RAM Chips to 980 Mini

HOUSTON – Following its past performance on the 960A minicomputer, Texas Instruments has coverted its 980A minicomputer to a "B" model using the 4K random access memory (RAM) chips.

The main benefit of this change is to double the memory capacity up to 64K without increasing the cabinet space.

Two major features of the new memory system are built-in single-bit error correction and multibit error detection capabilities, along with fault isolation indicator lights for identification of failed memory components. The 4K RAM devices are mounted on plug-in modules, permitting rapid field service, TI said.

In addition to the new memory, the Model 980B has a new power supply for domestic and foreign power sources. Included in the single-quantity price of $4,975 are a rack-mountable chassis; 8K words of MOS memory with 750-nsec cycle time; programmable memory protection and privileged instructions; hardware multiply and divide; double precision instructions for load, store, add and substract; hardware memory address biasing; ROM bootstrap loader; I/O bus with four ports (expandable to 13 ports in basic chassis and 256 overall); a direct memory access channel expandable to eight ports; and eight directly addressable hardware registers, plus a status register.

Other standard features include 98 basic instructions (16-, 32-, or 48 bits),

TI can be reached through P.O. Box 2909, 78767.

Now you can get a foreground/background system for less than $25,000. And that's before discounts.

Now there's a foreground/background disk-based system available for thousands of dollars less than any other hardware/software combination. And it offers more performance than has ever been available before.

It's based on RT-11, Digital's new F/B operating system, and the PDP-11E10. (RT-11 is also available on other PDP-11 systems.) And you can run the single job version with just 8K words of memory and a dual DECtape drive for less than $18,500.

RT-11 is designed for the on-line user who is involved in program development and/or real-time applications. It's a fast, low-overhead (less than 3K resident) system. And you don't have to be a computer scientist to use it... or even to modify it.

New, high performance, extended versions of Dartmouth-compatible BASIC and ANSI-Standard FORTRAN IV are available. Both offer high level language support of sequential and direct access files, chaining, overlays, A/D's, D/A's, clocks, digital I/O, graphics, plotting, signal processing... And there's more coming. And the minimum FORTRAN and BASIC are supported on just 8K of memory.

These are just some of the features that make RT-11 the highest performing on-line system with the lowest price in the market.

For additional details on RT-11 performance, write Digital Equipment Corporation, Maynard, Mass. 01754 (617) 897-5111, Ext. 2083. European headquarters: 81, route de l'Aire, 1211 Geneva 26. Tel: 42 79 50. Digital Equipment of Canada Ltd., P.O. Box 11500, Ottawa, Ontario K2H 8K8. (613) 592-5111:

digital

DPMA Goal Is Professional Development, Education

By Edward J. Bride
Of the CW Staff

MINNEAPOLIS – Management education and professional development should be the primary goal of the Data Processing Management Association (DPMA), but making the DP manager's job easier should also have a high priority, members feel.

Accomplishing those goals was the subject of many discussions – and little agreement – during the DPMA's annual conference here.

One high priority of the group is aiding the development of the Certificate in Data Processing (CDP), formerly administered by DPMA but now under the auspices of the Institute for the Certification of Computer Professionals (ICCP).

But a much more basic issue was confronted by attendees who criticized chapter weakness, caused in part by nebulous goals of the association.

The basic question, "What can DPMA do for me?" is seldom answered, some people feel. Yet others countered with such remarks as, "It we only preserve our own jobs," then membership serves a valid purpose.

Making the DP manager's job easier can be accomplished on several levels other than individual education. Forms standardization within industries such as insurance or banking was a specific example cited by some users.

Societies/ User Groups

At the "issues" forum, members considered whether DPMA should hire a lobbyist to help further the association's interests in Washington, but a "straw vote" on that possibility was halted, owing to attendees' uncertainty as to what those interests might be.

Hardware and software standardization would be a likely place to start, as could metric conversion (just recently defeated in Congress but still of interest to computer manufacturers, attendees were told).

Session chairman Robert Marrigan, international vice-president for industry and government relations, suggested that DPMA was organized under the proper IRS structure for nonprofit organizations so it could, in fact, have a paid lobbyist.

This is different, Marrigan said, from the American Federation of Information Processing Societies (Afips), which cannot lobby, he said.

Some attendees at various sessions were concerned with the ineffective communication of mutual needs between DP educational institutions and using industries.

But Edward Glaser, the DPMA man of the year, placed much emphasis on the need to accurately state job requirements, which in many cases are overstated today, he suggested.

For example, many users who require college degrees in computer science are looking for junior programmers or operators, he stated.

"After writing three compilers as part of a graduate program," Glaser said, a person is not interested in going back to RPG coding.

Defending the educational community, he said, "Our job is not to teach a person his job now," but to enable a person to know when he is in trouble and "where to go to get help."

Glaser also advised DP managers to know corporate goals and apply them to an individual job, rather than just being concerned with DP.

" 'How' is not enough," he commented. With one change in technology, a person could become obsolete in technical knowledge. He used the transition of tab shops to data processing, autocoder to Cobol, and coding to managing as examples of this phenomenon.

And at another session, Eric Ustad, a board member of ICCP, stressed a theme that seems to be emerging into a trend: high technology and management are separate and equally valid career paths for data processors.

He proposed a possible hierarchy for CDP holders, with categories such as software management, systems, programming, etc.

He also announced that the Registered Business Programmer exam, which was not given this year, has been "suspended," pending an evaluation of possible overlaps with the CDP.

Afips Issues NCC '75 Call for Papers/ Session Proposals

MONTVALE, N.J. – With memories of NCC '74 still alive in some minds, the American Federation of Information Processing Societies (Afips) has issued a call for papers and proposals to organize sessions for the 1975 National Computer Conference.

Topics for NCC '75, which will be held in Anaheim, Calif., May 19-23, will center around three major areas.

User Applications and Methods will include such fields as finance, health care, retailing, distribution, transportation and manufacturing.

Science and Technology will include an exploration into the development of and the effect on system architecture of microprocessors, fast auxiliary memory, mass stòrage, intelligent terminals, transaction processing, distributed processing and networking, hardware/software tradeoffs and structured programming.

Sessions addressing the interaction with and impacts of computers on society will cover areas such as computer crime and its prevention, computer security, personal privacy, data banks, education, standards and electronic funds transfer.

Sept. 1 is the deadline for proposals to organize a session or panel discussion and a 150-word abstract of an individual paper.

Nov. 12 is the deadline for finished papers.

Final definition of program and notification of all authors, session chairmen and panelists will take place by Jan. 6.

Afips is soliciting previously unpublished papers. Total length should not exceed 5,000 words, with each illustration counted as 300 words. Each paper must, in addition, include an abstract of a maximum of 150 words.

All papers and proposals should be submitted in triplicate to Stephen W. Miller, Program Chairman, Building 30-L1092, Stanford Research Institute, Menlo Park, Calif. 94025.

For further information regarding the 1975 program contact: Donal Meier, Conference general chairman, 2756 Mountain View Drive, Escondido, Calif. 92027 or Stephen W. Miller.

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Paper Saves $4,000/Mo

Reduced Power Usage Is Big News Here

PHILADELPHIA – One of this city's major newspapers has managed to save $4,000 on its monthly utility bills by using a sensor-based computer which monitors and controls power demand.

Despite spiraling fuel costs, the *Philadelphia Inquirer and Daily News* is receiving utility bills in the same amount as six months ago when a small computer system, linked to sensor units on the 45 fan motors that circulate air throughout the printing plant, was installed.

The system works by lowering peak power demand and reducing overall consumption without cutting back productivity.

Shuts Off Fans

The computer, an IBM System/7, compares power demand with specified standards and shuts off the fan motors when necessary to reduce peaks. It also turns off designated fan motors at predetermined intervals.

The newspaper company, using the average demand for 1972 as a starting point, established standards of kilowatt usage for each segment of the day. The computer, linked to a specially installed meter which parallels the power company demand meter, works on a half hour cycle, constantly projecting power usage to the end of each cycle. If cumulative power demand exceeds the predetermined standard or edges toward the maximum, more than one fan motor may be shut down in rotational sequence. As demand is reduced, motors are turned on again. The computer can be bypassed and specific motors shut off if repair is necessary.

12-Hour Summary

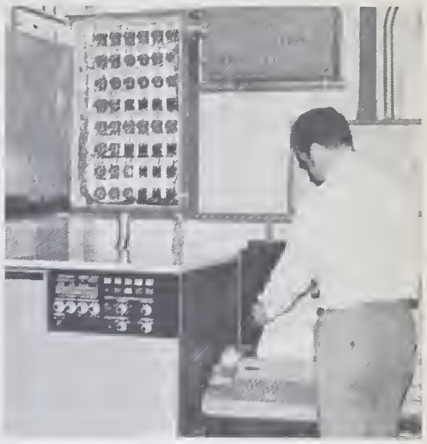
Reports are generated every five minutes showing the time of day, date, maximum kilowatts, standard kilowatts and actual kilowatts used. The printouts also show which fans are turned off and for how long. A complete summary is produced every 12 hours. The typewriter console, at which reports are generated, is also used for entering revised standards; there is no need for a regular operator.

Sam McKeel, general manager of the newspaper, stated that the computer "has more than paid for itself through the savings to date. But it has great additional capability which we plan, gradually, to put to use."

Control Temperature

The next major step planned by the company after its conversion to new stereotype casting units next month will be utilizing the computer to monitor and control the temperature of the "slave pots" in which molten lead is kept after being pumped from the central remelt system.

The computer will assure automatic regulation of temperatures to conform to changing metal loads. The result, according to McKeel, will be "dependable castings and significant cuts in our power consumption."


John A. Neighbors, DP manager of the *Philadelphia Inquirer and Daily News*, checks reports of power consumption at System/7's typewriter console in the fan room. Above console are manual controls for fan motors.

The company also plans to use the system to monitor and control a variety of power facilities that don't always have to be at maximum consumption, such as lighting.

Trace Ads

In another area, the System/7 will enable the advertising department to trace ads through the eight major steps of the production cycle. Similarly, equipment maintenance records, including those of the delivery truck fleet, could be monitored.

"We are currently using only 23 of the 32 control points available on our computer," McKeel noted, "so expansion will be relatively easy. Only additional wiring will be required."

McKeel expressed enthusiasm over his company's use of the computer system, adding, "Any future benefits we derive from it will be a pure plus – including our satisfaction in saving not just money, but energy."

Funds Sought for 8-Second Car Inspection Plan

PHOENIX – The computer says, "Your car does not meet pollution standards – do not pass go, do not collect your inspection sticker."

This scene could become reality if a $3 million federal grant is approved for the Arizona Highway Safety Office's proposed vehicle inspection system.

If granted, the funds will be used to add computers to emission testing sites here and in Tucson.

The goal of the total system, some two years down the "road," is a state computer printout telling each motorist which parts of his car need fixing or replacing and, conceivably, what the cost of these repairs should be, according to Jim Hill, head of the safety office.

Inspection would consist of five steps – two visual and three computerized.

Visual inspection would check for cracked windshields, malfunctioning wipers and dead lights as well as bad shock absorbers and ball joints.

The computerized portion of the inspection would be aimed at checking the vehicle's performance against predetermined tolerances for every make and model of car.

Exhaust emissions would be measured for pollution and possible engine or carburetor trouble. The computer could even be programmed to determine which wire or spark plug needed replacing.

A second computerized test would predict, based on input of the operator's daily driving habits, whether the car's brakes would be likely to fail in three months or 12,000 miles. The computer could also predict how long it would take to wear the brakes down from 80% to 50% of their efficiency, Hill said.

The final computer check would locate any problems in the alignment or steering mechanism.

After completion of the inspection, each motorist would receive a printout of needed repairs, Hill said, and hopefully, by 1976 the system would be expanded to list a price range for parts and labor charges.

The initial system, which Hill hopes to have operational by January 1975, could process one car every eight minutes.

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By Inserting Card, Pressing Button

House Pols Save Time With Computerized Polling

WASHINGTON, D.C. – An electronic voting system in the House of Representatives has cut by more than half the amount of time required to run through a quorum call and roll call vote.

Under the manual system, a clerk called members in alphabetical order, waited for a response, conducted a second call of members not responding to the first call and tallied the vote.

Now, a legislator, with the aid of the automated voting system, can indicate his presence on the floor or register his vote on an issue simply by inserting a coded voting card into a vote station and pressing a button.

The Committee on House Administration estimates the automated voting system will pay for itself in one session of Congress through time saved by representatives in responding to quorum calls and roll call votes.

270 Hours Consumed

During the first session of the 92nd Congress, for instance, there were 212 roll call votes and 152 quorum calls, which means that up to 270 hours of a member's time could have been consumed in waiting to cast a vote.

When a vote is called, most representatives are in their offices, across the street from the Chamber.

The representative has 15 minutes in which to respond to a call. Under the traditional system, he then had to wait for his name to be called by the clerk before casting his vote.

Now, the member responding to a call may enter the House Chamber, and, without waiting for a formal polling of names, insert his hole-encoded plastic card in a voting station, indicate his preference and immediately return to his work.

To vote, a member inserts his vote card into a slot in one of 44 voting stations distributed throughout the floor of the House.

Each station has three push-button lights; a green Yea, a red Nay and an amber Present. A blue indicator light is illuminated whenever the voting station is available for use.

The computer determines the validity of the vote card, and if verified opens the vote station to the member. He may then vote by pushing the button of his choice.

Each station is polled by dual Control Data CDC 1700 computers approximately once each second, and can recognize up to 10,000 different combinations of punched holes.

Display panels, located above and behind the Speaker's desk and above the press gallery, contain a roster of all member's names. When a vote is to be taken, the panels are illuminated. Adjacent to each name are three lamps which are illuminated in red, green or amber to indicate how the member voted.

Two summary display panels are located on the east and west walls of the Chamber. During a vote, these panels show the number of the issue under consideration, running totals of the votes, and time remaining in the vote period.

CRTs are located at the majority and minority tables, at the tally clerk's desk in the well of the floor, and in the tally clerk's office adjacent to the Chamber. The CRTs at the majority and minority tables can display upon command such information as a membership roster with indications of vote preference and a tally of votes by party affiliation.

On a remote printer in the tally clerk's office, the clerk may generate complete vote results in Congressional Record format, a membership listing complete with all legislative data associated with each member, brief abstracts of bills under consideration, a listing of individual voting records, and a summary of the day's voting activity.

Seven Food Brokers Share Joint System For Sales Reporting

MIAMI – Seven food brokerage firms across the nation have identified a common information processing problem and created a computer program sharing system, according to a spokesman for the Budd Mayer Co., Inc., a participating food broker based here.

Serving more than 1,000 South Florida supermarkets and institutional feeders by representing 20 to 25 major food manufacturers, Budd Mayer requires a variety of food order, sales analysis, accounting and merchandising reports, the company spokesman said.

He suggested his company's needs and resources are representative of those of the other firms in the cooperative.

"We knew that individually we could not afford the investment in programming development and installation start-up," the spokesman said.

Together, the firms developed the programming required to generate the necessary reports. Each firm has its own computer; the Budd Mayer Co. operates with an IBM System/3 Model 6.

Sales analysis is typical of the kind of reports required by the firms. "The basic information from customer orders is typed into the computer by our operator," explained the Budd Mayer spokesman. "Once that basic data is in computer-usable form, retrieving specialized sales reports becomes automatic."

Each day, complete reports of the previous business day's sales by department are compared with the same day a month earlier and a year earlier. Cumulative totals month-to-date are also printed.

He said commission totals also are calculated, as are commission percentages for grocery, dairy, frozen foods, institutional and nonfood sales.

Other programs generating reports:

- Provide manufacturers, management and sales personnel with order information.
- Analyze profitability each day.
- Tally weekly sales for consideration in planning market promotions and strategies.
- Analyze sales exceptions and problem items before they become widespread.
- Compare sales data to determine increase or decrease in share-of-market.
- Study retail spoilage by product.

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Graphic Displays Help Engineers Design Airport Ground Control

CAMBRIDGE, Mass. – Graphic displays of airports, complete with taxiing aircraft, are helping engineers at the Department of Transportation's (DOT) Transportation Systems Center create automated aircraft ground-control systems.

Although air traffic control towers keep track of aircraft taxiing around the airport, smooth coordination of all ground equipment depends on visual contact from the tower. DOT hopes to automate these ground controls.

"Present radar and electronic air traffic control systems follow a plane from takeoff through flight and landing," Richard D. Wright, a systems analyst at DOT, said. "We are studying the feasibility of similar systems for aircraft after they land."

To compare the relative merits of model airports, DOT uses a Sanders Adds 900 graphic display system interfaced to a Digital Equipment Decsystem-10. In addition to this direct, parallel interface, the graphics system has four serial interface lines which can be linked to anything running up to 9,600 bit/sec.

Department of Transportation systems analyst Richard D. Wright works computer model of an airport as part of program studying ground control systems.

The Adds 900 has a computer built into it – anything from a Varian 620i to an Interdata mini – and will hook onto just about any kind of computer system. The DOT graphic display uses a Honyewell 516, according to Wright.

The graphic display outlines the airport with runways and other data. Aircraft are displayed as moving symbols with identification tags that follow an airplane's course on the ground.

Seaway Displayed

The displays, which can rotate images, "zoom in" on specific areas of the display or shrink certain sections, are also being used by DOT for studies of the St. Lawrence Seaway.

As with the airport displays, computer models of the seaway, with locks and ships, can be displayed and specific sections "blown up" for more detailed viewing. The position of moving ships is updated automatically as they travel through the seaway.

"The St. Lawrence Seaway project is being conducted to determine different ways of displaying information," Wright said. "The study should tell us what types of equipment will be needed for a system that could eventually control and schedule the movement of ships.

"We also hope to determine how often a display, or computer picture, should be updated," he commented. In addition to the psychological effects on the viewer, DOT wants to know the maximum or minimum amount of information the viewer can follow and how the controller would fit into the overall system.

Engineers at the Transportation Systems Center are also studying "people movers" – a form of rapid transit system. Details such as how close one car should be to the other and the motions of people inside a moving vehicle are being analyzed with the aid of the displays.

Intelligent Terminals 'Round Up' Data for Cattle Processing Firm

OMAHA – American Beef Packers, Inc. here is using an integrated system of intelligent terminals to "round up" information on steers.

American Beef's four plants can each process an average of 200 head of cattle an hour, or about 1.5 million head a year. That adds up to one billion pounds of edible beef products and untold amounts of inedible offal, rendering and hides used for fertilizer, feed supplements, flavoring or leather.

From the time the cattle enter American Beef's processing plants until they leave as sides of beef or as fabricated cuts, an intelligent terminal is used to gather information about their progress.

After the animal is brought into the processing plants, it is killed, cut into "sides" of beef, weighed on a "hot scale" and numbered.

The weight and number are entered into a Sycor 340 terminal and stored on cassette tapes.

The weighing-in process allows management to analyze the lot totals of cattle purchased and cost-evaluate their buyers' judgment in cattle selection.

After the animals are weighed hot, the sides are shrouded and put into coolers for overnight chilling. Because cattle usually lose from 1% to 2% of their weight in the chilling process, they are weighed again on a "cold scale" and again their weight is recorded.

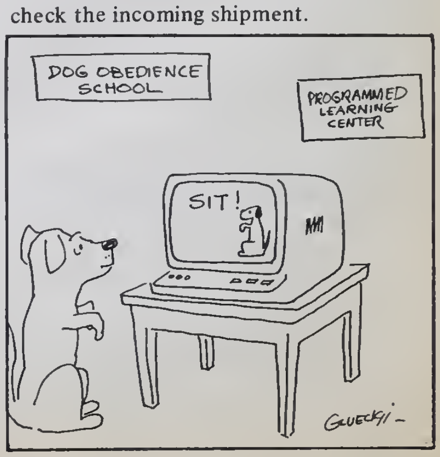
At this point, the animal is graded and a determination is made as to whether the beef is to be sold as a carcass or transferred into fabrication.

The carcasses transferred into fabrication are then moved onto powered chains and conveyors to cut the carcasses into primal and subprimal portions and placed in bags and boxes for shipment.

Still keeping track of the carcasses in fabrication, the terminal is able to tell production supervisors whether the beef is being properly processed. Based on these reports, supervisors can tell if the edible yields are what they should be; if they are not, what areas can be improved upon.

When the cattle, now packaged, are ready for market, salesmen are given detailed reports on what is available to be sold.

Still on the job, the terminal produces a truck summary by item, box count and weight to help warehousemen check the manifest before it goes out and let customers and remote storage facilities check the incoming shipment.



CI Notes

Bell's Bubble Packs Bits

TORONTO – Bell Laboratories has developed a magnetic bubble memory that can store up to 460,544 bits in a pack that is 3-3/4 in. by 1-3/4 in. by 13/16 in.

The memory's average access time is 2.7 msec, with a data rate of 700 kbit/sec and a read error rate of less than one error in 630 billion read operations, according to Paul C. Michaelis, who described the memory at the IEEE International Magnetics Conference here.

Entrex Licenses Nixdorf

BURLINGTON, Mass. – Entrex, Inc. has licensed Nixdorf Computer, AG to manufacture its line of key-to-disk systems.

In addition, Nixdorf's sales territory for Entrex equipment was expanded from Germany, Austria and Switzerland to include Australia, the Union of S. Africa and all of Western Europe, excluding the UK.

"The volume is now so large that it is more economical for both Entrex and Nixdorf to have the systems manufactured in Europe," observed Entrex President Donald W. Fedderson.

Nixdorf has sold more than 200 Entrex systems with a retail value of over $16 million in Germany, Austria and Switzerland, he said.

Pertec to Sell COM Line

EL SEGUNDO, Calif. – Pertec Corp. has agreed to sell its computer output microfilm (COM) product line to Bell & Howell Co. for an undisclosed amount of cash.

Under the terms of the agreement, Pertec will continue to make the product line for Bell & Howell at levels "equivalent to or better than those of the past year."

Supershorts

Sanders Associates' Products Division has appointed Labtronics, Inc., Syracuse, N.Y., as representative for the Sanders line of digital modems and spectrum analyzers.

– – –

Pertec Corp. has appointed Mactronics SA, Lugano, as its Swiss representative. In addition, Mactronics Italiana, Milan, will handle Pertec peripherals in Italy.

– – –

Ampex Corp. is phasing out its Albuquerque, N.M., plant over the next few months. Instrumentation data recording product lines will now be manufactured in Marina Del Rey, Calif.

– – –

Correction

DTSS, Inc. [CW, June 12] is a for-profit corporation.

'Benefit U.S.'

Executives Defend Multinational Firms

By Toni Wiseman
Of the CW Staff

CASTLE HARBOUR, Bermuda – Top computer industry officials defended multinational corporations recently, stating these corporations have contributed significantly to the growth of the U.S. economy.

The discussion occurred at a meeting of the Computer and Business Equipment Manufacturers Association (Cbema) here.

"In our experience a certain amount of overseas production is vital to success in worldwide marketing," Paul Mirabito, president, Burroughs Corp., said, noting 35% of Burroughs' $1.3 billion revenue last year was derived from overseas operations.

Answering an accusation that investment overseas is resulting in reduced employment opportunities in the U.S., Mirabito cited reports from agencies ranging from the U.S. Chamber of Commerce to the U.S. Tariff Commission showing "those companies with the most intense foreign investment increased their employment in the U.S. more than two and a half times faster than the average of all U.S. manufacturers."

Control Data Corp.'s Chairman William Norris concurred with Mirabito, stating "statistics published by the U.S. Department of Commerce indicate the U.S. computer industry alone contributed to the favorable U.S. balance of trade by one and a half billion in 1973.

"One in every three of 23,000 Control Data domestic computer business employees derives his job totally from our operations in other countries," he added.

The exchange of scientific information is essential to world progress for further development and application of computer technology, Norris said.

"The biggest single problem with respect to multinational companies is ownership," Norris stated. "They are huge resources, and the perception of most of the world of their power and profits makes them natural targets of blame for many national problems," he concluded.

Against Regulation

Stephen Keating, president of Honeywell, spoke out against legislation which would regulate multinationals, and "return to a protectionist stance of nearly 50 years ago, or place severe limitations on direct and indirect foreign investment by U.S. companies."

"It seems to me that in almost every case, these proposals inhibit world trade per se and block realization of the greater goal of world trade, which is really what I think we're all dedicated to – the goal of building a system of world business that will help enrich the lives of people from all the countries, not just people from some country at the expense of another," Keating averred.

'Misfit'

Frank Cary, IBM chairman, alluded to the "increasing misfit between the fact of global economic life and the political organization of the world." He said nations consider borders as barriers and walls, while multinationals view them as doors for the exchange of ideas, products and people.

"There are those who charge that through the agency of multinationals, American technology has found its way into other countries and has bolstered their ability to compete with the U.S. to our detriment," Cary said. In reality, he maintained, the U.S. is "at least as dependent on technology from abroad as other countries are on ours."

Investment abroad is essential because it opens new markets and, more important, affords access to raw materials and foreign technology, observed Ray Herzog, president of 3M.

U.S. Seen Lagging in Application Of Computerized Manufacturing

CAMBRIDGE, Mass. – Computer-directed manufacturing techniques have the potential of cutting factory costs and giving industrial workers more leisure time, but competing nations are leaving the U.S. behind in applying these methods.

That was the conclusion of participants from five countries who took part in a conference on computer-managed manufacturing at MIT.

Participants came from the U.S., West Germany, Norway, Japan and Poland.

The conference participants found other countries have taken the lead in developing many new techniques largely because their governments offer financial support and encourage cooperation between government, industry and universities.

In formal findings to be published later, the conference listed computer-managed manufacturing's benefits as "lower cost, improved quality, increased manufacturing capacity, increased equipment utilization, reduced scrap and waste, improved quality of work life, exportable high technology, fast reaction time and reduced inventory."

'Hierarchy'

A "hierarchy of computers" can manage the whole manufacturing process, according to Robert T. Lund, senior research associate in MIT's Center for Policy Alternatives and director of the conference.

Much of the technology exists, Lund said, but the U.S. has been slow in getting into the field.

Among the barriers to its spread in the U.S., the conference pointed to "antitrust fears, high-risk investment, tax policies, inadequate dollars and skills, untried technology, a small and fragmented machine-tool industry, resistance by potential users and lack of university-manufacturing cooperation."

While automation can end jobs, attendees were told, it also allows greater economic growth and so creates new jobs.

To spur adoption of computer-managed manufacturing in the U.S., the conference recommended the Federal Government act as a catalyst to encourage the development of computer-managed manufacturing.

Study Forecasts

Memory Market Faces Slowdown

NEWTON, Mass. – Independent memory makers should brace for a slowdown in 1975, according to a study by International Data Corp., a market research firm here.

"The decreasing activity in the core memory 360 and 370 models will result in fewer independent memory shipments . . . and the 370 semiconductor models are not likely to take up all of the slack," the report indicated.

In the transition between core and semiconductor, the independents will experience an "off" period between the two technological cycles.

Although there will be about a 50% reduction in the number of independents' 360 memories out in the field, the total value of these installed memories will change very little through year-end 1976, as users continue to expand their systems, the report predicted.

Independents are aiming at users renting 370s, in contrast with the marketing for 360s, which was directed at leased systems.

The report characterized the 360 market as "diminishing" and the 370 market as "tough and uncertain."

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RAYTHEON

Calcomp President Says

Lack of Software Limits Graphics Growth

By Molly Upton
Of the CW Staff

ANAHEIM, Calif. – The graphics business is showing renewed signs of growth, but is limited by the lack of applications software, California Computer Products, Inc. (Calcomp) President Lester L. Kilpatrick said recently.

More applications software is needed in order to expand the market, he said. Calcomp develops basic software that makes it easier for a user to use if he knows what his problem is.

"Basically we try to be a catalyst to inspire others to do applications software," Kilpatrick explained.

Calcomp also does some applications software, but those who have knowledge of specific industry needs or the mainframe manufacturers should be supplying such software, he noted.

Kilpatrick said he would welcome IBM's entrance into the plotter market, with the hope that IBM would provide software, thus expanding the marketplace.

'If We Gave Plotters Away'

"Even if we gave plotters away, the market wouldn't grow," he noted, emphasizing price is not the principal market-limiting factor. Calcomp's revenues from graphics products will be around $30 million this year, he said.

But the tape and disk area is so big, Kilpatrick wouldn't care if the market didn't grow, if Calcomp could take business away from existing suppliers.

Calcomp's disk product line ranges from 2311-types up through a double-density 3330-type unit.

Kilpatrick said Calcomp "has no desire to slavishly copy IBM" and "hadn't gotten around" to developing a product compatible with IBM's double-density 3330. Calcomp's new disk product, the Trident, designed as an alternative to the IBM Winchester, is not compatible and does not have heads resident in the disk.

IBM, he said, recently changed some of the specifications on its Winchester. In addition, while the Winchester appears attractively priced for one disk, the user has to pay for heads every time he needs another disk, he pointed out.

Kilpatrick emphasized the world does not seem to notice that Calcomp gets a good part of its volume – over 73% in the second quarter – from non-IBM-compatible products. The OEM business gives Calcomp the volume production that enables it to sell products on a competitive basis with IBM without losing its shirt, he said.

Century Data, the OEM arm of Calcomp, is being integrated into Calcomp. In a recent restructuring, all functions were assigned to the engineering, manufacturing, finance, marketing or field service departments.

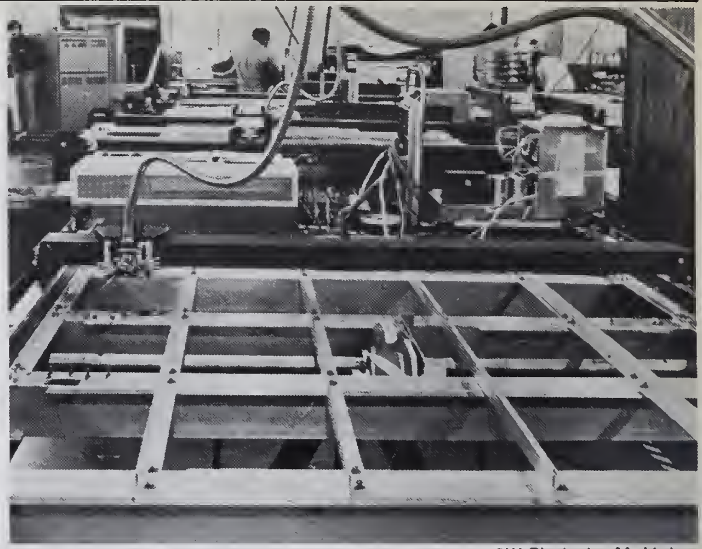
Floppy Disk Drives

Calcomp makes floppy disk drives as an outgrowth of the in-house development for its 3330-type drive.

Floppy drives won't be profitable until the ranks thin out, Kilpatrick commented, adding he is glad Calcomp doesn't have to make a profit on the drives within the next two years in order to survive.

"There will be two or three makers who will survive who will be happy they thought of it, and four or five others who will stick around," he said.

Calcomp is optimistic about its automated tape library system, built by Xytex, which is usable by several thousand installations, he said. Calcomp is in the process of acquiring Xytex.



CW Photo by M. Upton

748 Plotter Being Assembled

Cbema and Adapso Make Appointments

William F. Hanrahan has been named assistant director of standards for the Computer and Business Equipment Manufacturers Association (Cbema).

The Association of Data Processing Service Organizations (Adapso) appointed Thomas V. Farewell director of member programming.

Farewell will assist in developing industry image building programs, and serve as a liaison with federal and state government agencies.

ENTREX error checks
won't bounce at the data bank.

Demand High for Diablo Printer

HAYWARD, Calif.— Demand is so good for Diablo's Hytype printer, the firm's biggest problem is increasing production to meet the demand, according to Charles J. Kotsaftis, product manager of printer products.

Currently Diablo is quoting four to six months delivery, he said.

Shipments are running at the rate of 1,000 units a month and the target is 2,000 per month by the first of 1975, Kotsaftis added.

Diablo is adding another 100,000 sq ft, most of which will be occupied by printer manufacturing, he said.

But Diablo is working on new products, despite the popularity of the Hytype.

"You have to be constantly obsoleting products," Kotsaftis said.

If there is a new product, Kotsaftis said he hoped it would be at a lower price.

"We could sell a lot more Hytypes if they were at a lower price," he commented. A firm needs to offer a cost-effective product, and with high volume, cost comes down, he added.

Hytype Offshoot Spurs 'Sibling Rivalry'

By Molly Upton

Of the CW Staff

HAYWARD, Calif. – Around the corner is a familiar phrase in California, where young firms with competitive products are often located within hailing distance of older, more established companies where founders used to work.

Qume, maker of a daisy-wheel printer that bears a startling resemblance to Diablo's Hytype, is one such firm.

Qume's printers are, in fact, the brainchild of the Hytype designer, David Lee, who is one of Qume's founders. Orders are ahead of plan, according to Avery Blake, vice-president.

The product incorporates several features that contribute to ease of manufacture and maintenance, as well as better print quality, Blake said.

One of the features that contributes to print quality suitable for offset work is the arrangement giving six different levels of hammer intensity as it strikes the characters on the wheel, he said.

The unit is designed with three interchangeable PC boards in the back of the machine. The carriages are also interchangeable, Blake said.

The Model Q30 is priced identically to Diablo's Hytype.

Only a year old, the firm has started production and has accepted a few medium-volume orders, Blake said.

Blake said he would like to see the printers shipped to a broad base of users, both in terms of geographic locations and applications, rather than to lock itself into one large contract.

Qume is aiming for the terminal, word-processing, small business machines market as well as specialized applications that require plotting capabilities, he said.

The firm is completing its second financing, for $3 million, and expects to get into positive cash flow in a year, Blake added. The $3 million will be partially private equity and partially debt, he said.

Qume is moving into a 33,000-sq-ft plant this month.

Blake expects production will be up to several hundred units a month by the end of this year.

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Orders & Installations

Federal Bank Orders Processing System

DALLAS – The Federal Reserve Bank of Chicago has become the first Federal Reserve Bank to order a Trace item processing system from Recognition Equipment, Inc.

The system will be used to process "low-speed" checks and to reenter documents that have been rejected by the bank's existing high-speed equipment. The Trace system features optical and magnetic reading capabilities, on-line microfilming, alphanumeric and bar-code Ink-Jet printing at 400 in./sec.

Trace also includes a key-to-disk system and 11 terminals.

Associated Press has ordered a nationwide data communications network from General Datacomm Industries, Inc.

Trans-A-File Systems Co. has ordered mass memory data storage systems from International Video Corp. for use in new installations of TSC's digitized document filing, storage and retrieval systems.

Long Island Savings Bank has ordered a Univac 90/70.

First Computer Services Corp. has contracted for the use of a System 2000 data management system from MRI Systems Corp.

Hammond Plastics, Inc. has ordered a Foxboro Fox 2/10 computer system, Spec 200 electronic analog instrumentation and Interspec, a module to link Spec 200 configurations with computers.

Pima Community College has installed a Decsystem-10 from Digital Equipment Corp. for administrative and instructional purposes.

Rike's Department Store has ordered an electronic point-of-sale system from NCR.

American Bechtel, Inc. has ordered a W2500 computer system from Westinghouse Electric Corp. for in-plant power system data monitoring, supervisory control and automatic generation control at a soda ash plant.

Foreign Orders & Installations

The Thai Farmers Bank in Bangkok, Thailand, has ordered a Burroughs B3700 valued at $1 million.

The system will be used for a range of banking applications including demand deposits, savings accounts and loan accounts.

The Italian Ministry of the Treasury has ordered three Univac Series 90 computer systems. The $3.7 million order includes two 90/70s which will be used in Rome and Bologna to prepare pension checks. A 90/60 will be used by the State Welfare Bureau for the construction and maintenance of a data file.

Banco de la Nacion, Argentina, has ordered 44 L8000 business minicomputers from Burroughs.

Finnish Post Bank, Helsinki, has ordered 20 PTS-100 systems from Cossor Electronics Ltd., Raytheon Co.'s British subsidiary, to access and update records of repeating payments such as clients' salaries and fees.

Schweizerisch Kreditanstalt, a Swiss credit bank, has installed four IBM 360/50 core enhancement units from Vanguard Data Systems.

Graz Computer Center, Austria, has ordered a second Univac 494 computer system to serve the needs of the local government and the regional hospitals under its control.

Computer Resources Ltd., Canada, has installed Mini-Miz (accounts receivable, accounts payable, billing, inventory control and financial reporting) and a specialized version of the MM108 subscription fulfillment and address label subsystem from Automated Quill, Inc. to process membership files.

Dublin Savings Bank has ordered a Century 101 and 10 NCR 270 on-line financial terminals to link the bank's branches throughout Dublin with its central office.

Minis Suggested for Sparking European Industry Expansion

LONDON – Minicomputers have been suggested as the key to a successful operation within the European computer industry.

Minicomputers, according to an editorial in the British *Computer Weekly*, represent both a market sector which is not dominated by IBM or any other independent company and one whose growth prospects are healthy for European initiative.

Computer Weekly estimated the minicomputer market will continue to grow at 40% a year, as against 15% a year for the computer industry as a whole.

Computer specialists have made a proposal to the European Economic Community (EEC) commission, suggesting that the European minicomputer industry could adopt a strategy based on the introduction of standard specifications for a minicomputer system.

The main proposals for the growth of the European industry on a cooperative basis include:

- "A standard computer system would be defined which would be capable of as wide a range of implementation as possible.
- "Manufacturers would be encouraged by public funding to devclop parts of the standard system including both hardware and software.
- "Companies would be licensed to sell systems made up from a catalog of compatible products designed and manufactured by the various companies within the scheme.
- "The marketplace would be established by a coordinated purchasing policy on the part of the EEC member governments.
- "Companies participating in the scheme would pay a levy on systems sold; this would be used to fund the management of the scheme and to recover thc initial investment," the report suggested.

Avoiding Duplication

This, according to the *Computer Weekly* editorial, would allow customers to select systems from a wide catalog of products, while manufacturers would need to develop only limited parts of the total system, thereby avoiding duplication and encouraging specialization.

The key to this is, of course, compatibility.

At the hardware level, *Computer Weekly* said, a single interface used for all purposes must be defined.

And in terms of software, systems must look the same to programs; therefore, an interface must be accepted which is completely defined, simple, economic and secure.

This systems language, the editorial stated, would be specially chosen for its suitability in implementing operating systems and high-level languages, such as Fortran and Cobol, cheaply and efficiently.

"Although this might seem a somewhat 'rose-tinted' point of view," *Computer Weekly* stated, "it would seem that the concept is both powerful and flexible enough to warrant serious consideration.

"It is claimed that the proposed architecture is sufficiently different from that of existing computers for no one manufacturer to have an outstanding initial advantage, and this should make it easier to obtain cooperation."

International News

Data 100 Plans to Increase Overseas Business in 1974

MINNEAPOLIS – Data 100 plans to substantially increase its overseas business during 1974, both through shipments and increased foreign production, according to Bruce Bambrough, executive vice-president for operations.

The firm expects to locate its third foreign plant in Scotland, in addition to the two in Chichester and Hemel Hempstead, England, he said.

This should double the firm's overseas production of remote batch terminals to about 1,000 annually, he added.

In addition, Data 100 opened new marketing and service subsidiaries in Italy and Australia.

"This year we expect to increase our overseas business by 50% and ship more than 480 terminals," Bambrough predicted. Last year about 280 of the firm's large remote batch terminal products were delivered overseas.

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- **Then go to line control.** With SPD terminals, you can perform line monitoring and data concentration. The same device that does your terminal processing also replaces multiplexers and data concentrators.
- **Then remote batch processing.** With SPD terminals, you have the option of upgrading to a batch mode at any time. Any terminal can be converted to accommodate disk storage, high-speed printing, and up to six other peripheral attachments whenever you require.
- **And don't forget systems integration.** Incoterm terminals can work with any line discipline, emulate any other terminal, interconnect to any central processor, and fit compatibly and easily into almost any planned or existing data communications network. SPD terminals are easy to program, install, learn and use. They are supported by Incoterm's direct national service organization which operates out of major cities in the U.S.

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REI Realigns Debt; Acquisition Advances

DALLAS – Recognition Equipment, Inc. (REI) has restructured the remaining $17.3 million principal balance outstanding of its 7.5% convertible subordinated notes, clearing the way for acquisition of Corporation S.

In exchange for the $17.3 million of old notes, REI gave noteholders $2.5 million in cash, $2 million of 7.5% promissory notes payable in 90 days, $9 million of 9% installment notes payable quarterly in 60 equal installments and 596,745 shares of common.

REI mortgaged its principal manufacturing facility in connection with the exchange.

The company will recognize for financial reporting purposes a gain of about $2 million before taxes during the third quarter because the carrying value of the old notes exceeds the fair market value of the assets delivered to the noteholders.

Corporation S runs service centers operating REI document processing systems.

DG 3d Quarter Boosts 9-Month Net

SOUTHBORO, Mass. – Data General Corp. showed hefty sales and earnings increases for the third quarter, which helped boost results for the nine months ended June 8.

Earnings in the quarter reached $2.5 million or 31 cents a share compared with $1.6 million or 20 cents a share in the year-ago period.

Revenues also soared, to $21.3 million compared with $12.9 million in the same year-ago period.

In the nine months, the minimaker earned $6.3 million or 77 cents a share compared with $4.3 million or 52 cents a share in the same 1973 period.

Revenues for the nine months reached $51.2 million compared with $33.9 million in the year-ago period.

Microdata Earnings Climb 579%

IRVINE, Calif. – Microdata Corp.'s third-quarter earnings jumped 579% as revenues reached record proportions.

Earnings, including a $173,700 tax credit, totaled $361,900 or 23 cents a share compared with $53,327 or 3 cents a share in the year-ago period, when there was a tax credit of $26,000.

Revenues for the three months ended May 31 climbed to $3.8 million from $2.3 million in the same 1973 period.

In the nine months, Microdata earned $912,400 or 57 cents a share compared with $575,892 or 37 cents a share last year.

Tax credits kept pace with the earnings growth, rising to $431,500 from $271,000 in the year-ago period.

Revenues Jump

Revenues jumped to $9.6 million from $6.5 million in the 1973 nine months.

While shipments of the Reality system comprised less than 10% of the firm's shipments to date, fourth-quarter shipments will exceed 20% of the total shipments for the quarter, President Donald W. Fuller said.

Applied Magnetics Sees Poor Half

GOLETA, Calif. – Applied Magnetics Corp. expects sales and earnings for the six months ending Sept. 30 to be hurt by labor troubles in Portugal and continued domestic inflation.

The firm had originally expected earnings to top those of the first half's $624,000, down from $1 million in the year-ago period. Chairman Harold Frank said the company definitely won't top last year's earnings of $2.3 million.

Applied Magnetics has increased prices on its products because of increased labor and materials costs, but there will be a lag before earnings reflect the increases, Frank said.

Executive Corner

■ Robert C. Wilson has been elected president, chief executive officer and chairman of the board of Memorex Corp.

■ Dr. Antonie T. Knoppers has been named to the board of directors of Hewlett-Packard Co.

■ Jose A. Guerra has become a member of the board of directors of IBM World Trade Americas/Far East Corp.

■ Alva T. Bonda, Kenneth M. Miller and Merrill Solomon have been elected to the board of directors of Penril Corp.

■ Wallace C. Kemper has been appointed chairman of the board, and Marshall F. Wallach president, of Systemation, Inc.

■ George J. Moore has been elected president of Bac-Data Medical Information Systems, Inc.

■ Christopher M. Kirgan Jr. has been named vice-president, sales, and Alan W. Ware vice-president, customer service, for Scan-Optics, Inc.

■ Kenneth E. Geason has been appointed vice-president, computer peripherals marketing, for Fabri-Tek, Inc.

■ John D. Gorman has been made vice-president, marketing, of Financial Industry Systems of Hartford.

■ Preston T. Smith has been elected vice-president, business development, of Boeing Computer Services, Inc.

■ G.C. Erickson has become vice-president, marketing support, for Basic/Four Corp.

■ John B. Griffith has been named vice-president, marketing, for Educational Data Systems.

■ Systems Engineering Corp., a Richmond Corp. affiliate, has appointed four vice-presidents: Leonard C. Anderson, M. Earl Blackwell Jr., Richard A. Nelson and R.K. Smith Jr.

■ Elbert Matthews has left Sycor, Inc. to become vice-president, Communications Systems Division, for Informatics, Inc. John D. Strong succeeds Matthews as director of operations for Sycor.

■ Edmund F. Sweeney has been promoted to director, Electronic Systems Engineering at Bunker Ramo Corp.

■ James G. Root has been appointed management sciences director and Richard C. Kirby, time-sharing director, for GTE Data Services, Inc.

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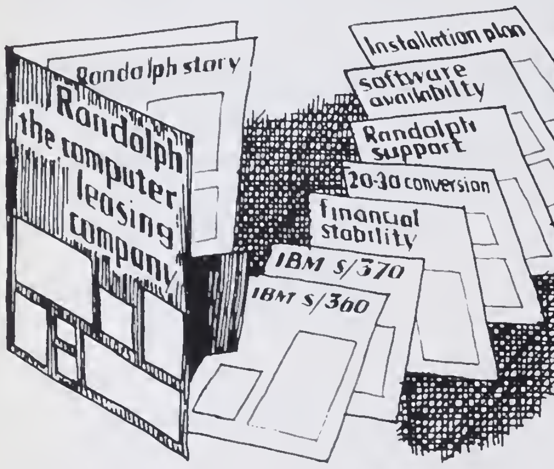

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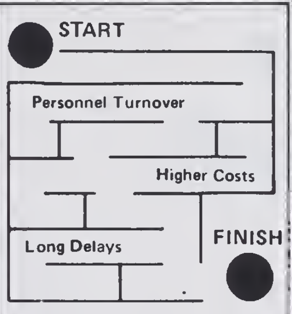

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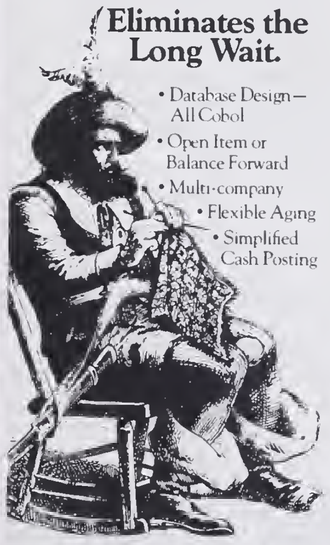

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INVENTORY CONTROL-25
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Change Proposed for Stating R&D Costs

STAMFORD, Conn– An exposure draft issued by the Financial Accounting Standards Board (FASB) would require that "all research and development costs not directly reimbursable by others shall be charged to expense when incurred."

If adopted, the proposed standards would apply to financial statements for fiscal periods beginning on or after Jan. 1, 1975, although earlier application is encouraged.

Costs capitalized prior to the effective date would be written off as a prior period adjustment.

Comments on the exposure draft are requested in writing by Aug. 5. They should be sent to: Director of Administration, Financial Accounting Standards Board, High Ridge Park, 06905.

If adopted, this proposed statement will supersede Accounting Principles Board (APB) Opinion No. 17 insofar as that opinion applies to R&D costs, the FASB said.

The exposure draft requires that disclosure will be made of each of the following amounts (when applicable) for each period for which financial statements are presented:

- Total research and development costs incurred during the period (including amounts for research and development conducted in behalf of the enterprise by others).
- The amount of total research and development costs incurred during the period which is directly reimbursable by others.
- The resulting amount of nonreimbursable research and development costs incurred and charged to expense during the period.

In addition, if not otherwise apparent on the face of the income statement, the amounts and classifications in the income statement of the "nonreimbursable research and development costs incurred and charged to expense during the period" will be disclosed.

In making the proposal, the board reasoned: "At the time research and development costs are incurred, there is a high degree of uncertainty as to the amount and timing of future benefits, if any.

"A causal relationship between expenditures and specific future revenue can seldom be demonstrated, even with the benefit of hindsight, and the cost of a particular research and development project is not indicative of the amount of future benefits.

"Evidence indicates the failure rate is high for research and development projects and for new or improved products, processes or services resulting therefrom."

Incoterm Suffers 1st-Quarter Loss

NATICK, Mass. – Incoterm Corp. suffered a decline in first quarter revenues and a net loss, but the firm anticipates increased earnings and revenues for the year.

The slowdown in airline orders late last year was the major factor contributing to the declines, according to President Jean N. Tariot, who added that orders from airlines in the first quarter recovered and reached $3.3 million.

Backlog Up

New business area orders topped $3.7 million, bringing the firm's backlog to $14 million as of the end of May compared with $5.8 million a year ago.

The intelligent terminal maker lost $786,000 or 40 cents a share compared with earnings of $473,000 or 29 cents a share in the year-ago period ended May 26.

Revenues also dipped, to $2.9 million from $3.6 million in the same 1973 period.

Records Abide at NCSS

NORWALK, Conn. – With the completion of the first quarter, National CSS, Inc. posted its fifteenth consecutive quarter of record operating revenues and earnings.

Revenues jumped 55% to $8.2 million from $5.3 million in the same period a year ago, while earnings rose to $463,083 or 42 cents a share compared with $387,284 or 35 cents a share last year.

...Toward the Bottom Line

"Growth in demand for AT&T's communications services remains strong, even though it is below that of a year ago," Chairman John D. deButts said. However, the firm's earnings continued to rise, to $889.2 million in the second quarter, up 11.7% from $750.8 million in the year-ago period.

$$$

Daconics has received a $300,000 seven-year term loan from the First National Bank of San Jose, in addition to its $400,000 revolving line of credit with the bank.

$$$

Potter Instrument has refinanced its $16.9 million institutional debt. The new agreements, which mature July 31, 1975, replace previous short-term arrangements with banks and a long-term loan from an insurance company. Additional short-term credit arrangements have also been made with the banks.

$$$

Telefile Computer Products has received new financing of $300,000, which will be used to purchase production machinery and equipment for its field engineering staff and to establish spares depots.

$$$

Compuscan has completed a private placement of nearly $1.2 million of principal amount of its 10% convertible subordinated notes due May 15, 1986, together with warrants to purchase 116,500 shares of common expiring May 15, 1984.

$$$

Mohawk Data Sciences has completed a multinational 1974 credit agreement with a group of U.S. banks which enables MDS and certain subsidiaries to borrow up to $110 million, either in U.S. or European currencies or Eurodollars. The agreement expires Oct. 31, 1975 and replaces the existing domestic and foreign financing agreements.

$$$

Boothe Computer's completion of its exchange offer has left the company with a net worth of over $7.4 million and reduced future interest expenses, the firm said. Boothe agreed to accept $13.9 million of its 5-3/4% convertible subordinated debentures in exchange for $1.4 million cash and 1.4 million shares of preferred stock.

GAC Finance's previous agreement to accept $32.4 million payable from future cash flow as payment of Boothe's current $48.2 million indebtedness also becomes effective now. Boothe values its portfolio at 24% of cost, or $53.3 million, the firm said.

Your terminal may be the last of a dying breed.

The terminals and communications systems of tomorrow will be quite different than those of today. And our July 31st Supplement, *Terminals and Data Communications*, will try to provide you with a peek into the future. It will look at topics like these:

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- What the terminal-based systems of tomorrow will look like.
- The kinds of services and networks that will be available in the future.
- New protocols and new architecture for data communications.

If you'd like to plan ahead, then plan to read this important supplement in our July 31st issue. And if you're marketing in this area, make sure you schedule your ad in plenty of time. Closing date is July 12th. If you'd like more information, just contact your *Computerworld* salesman. Or call Judy Milford at (617) 965-5800.

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Earnings Reports

EX-CELL-O
Three Months Ended May 31

	1974	1973
Shr Ernd	$.66	$.51
Revenue	101,908,000	84,710,000
Earnings	5,368,000	4,298,000
6 Mo Shr	1.19	.93
Revenue	191,683,000	160,313,000
Earnings	9,696,000	7,813,000

ENNIS BUSINESS FORMS
Three Months Ended May 31

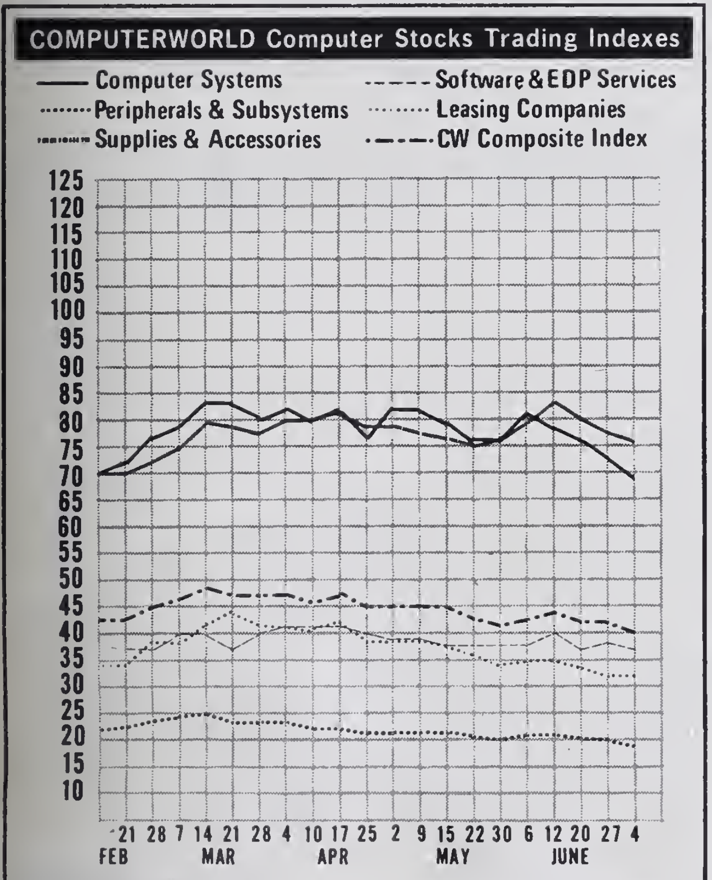
	1974	1973
Shr Ernd	$.40	$.19
Revenue	15,113,179	11,510,390
Earnings	930,228	451,004

GENERAL AUTOMATION
Three Months Ended May 4

	1974	1973
Shr Ernd	$.43	$.23
Revenue	15,200,000	7,800,000
Earnings	1,089,000	564,000
9 Mo Shr	1.15	.64
Revenue	41,367,000	19,831,000
Earnings	2,910,000	1,429,000

LOGICON
Year Ended March 31

	1974	1973
Shr Ernd	$.50	$.45
Revenue	22,689,893	12,427,604
Earnings	428,841	395,165



COMPUTERWORLD Computer Stocks Trading Indexes

COMPUTER ELECTION SYSTEMS
Year Ended March 31

	1974	1973
Shr Ernd	$.77	$.61
Revenue	5,873,105	6,372,789
Earnings	709,550	504,031

SIGNETICS
Three Months Ended June 16

	1974	1973
Shr Ernd	$.30	$.32
Revenue	34,554,000	19,943,000
Tax Cred	.....	439,000
Earnings	1,647,000	1,352,000
6 Mo Shr	.88	.64
Revenue	66,008,000	37,784,000
Tax Cred	437,000	1,031,000
Earnings	4,885,000	2,694,000

COMPUTER INVESTORS GROUP
Year Ended March 31

	1974	1973
Shr Ernd	.....	$.19
Revenue	23,344,000	17,160,000
Spec Chg	.....	a500,000
Earnings	(1,812,000)	332,000

a-Provisions for estimated loss on investments.

The 1974 loss includes about $1,872,000 attributable to a write-off by the company of loans made to an affiliated product supplier.

DATA GENERAL
Three Months Ended June 8

	1974	1973
Shr Ernd	$.31	$.20
Revenue	21,346,000	12,940,000
Earnings	2,537,000	1,642,000
9 Mo Shr	.77	.52
Revenue	51,125,000	33,927,000
Earnings	6,251,000	4,290,000

NATIONAL CSS
Three Months Ended May 31

	1974	1973
Shr Ernd	$.42	$.35
Revenue	8,230,182	5,280,368
Spec Cred	.....	a52,200
Earnings	463,083	387,284

a-Tax-loss carryforward.

ANDERSON JACOBSON
Year Ended March 31

	1974	1973
Shr Ernd	$.19	$.15
Revenue	8,645,489	5,882,953
Spec Cred	.....	a35,746
Earnings	475,095	375,026

a-Gain from sale of land.

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Computerworld Stock Trading Summary

TRADE*QUOTES

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COMPUTER SYSTEMS

EXCH		PRICE 1973-74 RANGE (1)	CLOSE JULY 3 1974	WEEK NET CHNGE	WEEK PCT CHNGE
N	BURROUGHS CORP	49-126	97 7/8	- 5/8	-0.6
N	COLLINS RADIO	16- 26	24 3/4	0	0.0
O	COMPUTER AUTOMATION	5- 20	10 3/8	-1 3/8	-11.7
N	CONTROL OATA CORP	21- 62	21 3/4	-3 1/4	-13.0
N	OATA GENERAL COPR	28- 49	30 3/8	-2 3/8	-7.2
O	OATAPOINT CORP	10- 21	10 1/4	- 1/4	-2.3
O	OIGITAL COMP CONTROL	2- 16	2 3/8	- 3/8	-13.6
N	OIGITAL EQUIPMENT	73-121	97 3/8	-S S/8	-5.4
N	ELECTRONIC ASSOC.	2- 9	2	- 1/8	-5.8
A	ELECTRONIC ENGINEER.	6- 14	7 1/2	- 1/2	-6.2
N	FOXBOPO	23- 48	27 3/8	-1 5/8	-5.6
O	GENEPAL AUTOMATION	22- SS	34 1/2	-1	-2.8
O	GRI COMPUTER CORP	1- 3	3/4	0	0.0
N	HEWLETT-PACKARO CO	70- 99	79 1/2	-4 3/8	-5.2
N	HONEYWELL INC	55-139	55 1/2	-1 3/8	-2.4
N	IBM	210-340	210	-2	-0.9
O	INTEROATA INC	7- 22	13 1/2	-2 1/4	-14.2
O	MICROOATA CORP	2- 10	3 5/8	- 1/2	-12.1
N	NCR	27- 46	30 7/8	-1 1/4	-3.8
N	RAYTHEON CO	22- 39	29 S/8	-2 3/8	-7.4
N	SINGEP CO	29- 74	29 1/2	+ 1/4	+0.8
N	SPERRY RANO	36- 56	37 1/2	- 7/8	-2.2
A	SYSTEMS ENG. LABS	1- 8	1 S/8	0	0.0
N	TEXAS INSTRUMENTS	83-138	93 1/4	+1 3/8	+1.4
O	ULTIMACC SYSTEMS INC	1- 11	1 1/2	0	0.0
N	VARIAN ASSOCIATES	8- 20	8	- 5/8	-7.2
N	WANG LABS.	11- 34	11 3/8	- 7/8	-7.1
N	XEROX COPP	106-169	109 3/8	-5 7/8	-5.0

LEASING COMPANIES

EXCH		PRICE 1973-74 RANGE (1)	CLOSE JULY 3 1974	WEEK NET CHNGE	WEEK PCT CHNGE
A	BOOTHE COMPUTER	1- 5	1 1/8	0	0.0
O	8RESNAHAN COMP.	1- 2	2 1/8	0	0.0
O	COMOISCO INC	2- 17	3 1/2	0	0.0
A	COMMERCE GROUP CORP	3- 6	3 3/8	- 1/4	-6.8
O	COMPUTER EXCHANGE	1- 1	1/8	0	0.0
A	COMPUTER INVSTRS GRP	1- 8	1 1/4	0	0.0
O	COMP. INSTALLATIONS	1- 2	1	0	0.0
M	OATRONIC RENTAL	1- 3	7/8	- 1/8	-12.5
A	OCL INC	0- 3	3/8	0	0.0
N	ORF INC	3- 9	3 1/8	- 1/4	-7.4
O	EOP RESOURCES	1- 3	3 1/4	0	0.0
A	GPANITE MGT	1- 6	2	+ 3/8	+23.0
A	GREYHOUNO COMPUTER	3- 6	3 3/8	0	0.0
A	ITEL	4- 12	4	0	0.0
N	LEASCO CORP	8- 18	9	- 1/8	-1.3
O	LEASPAC CORP	1- 8	1 1/4	0	0.0
O	LECTRO MGT INC	1- 2	1/4	0	0.0
O	NRG INC	3- 15	2 1/2	- S/8	-20.0
A	PIONEER TEX CORP	2- 10	2 7/8	- 1/8	-4.1
A	ROCKWOOO COMPUTER	1- 3	3/4	0	0.0
N	U.S. LEASING	12- 36	12	- 3/4	-S.8

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-8ALT-WASH
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
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SOFTWARE & EOP SERVICES

EXCH		PPICE 1973-74 RANGE (1)	CLOSF JULY 3 1974	WEEK NET CHNGE	WEEK PCT CHNGE
O	AOVANCEO COMP TECH	1- 2	1	0	0.0
A	APPLIEO DATA RES.	2- 4	2	- 1/8	-S.8
O	APPLIEO LOGIC	1- 3	1/8	0	0.0
N	AUTOMATIC DATA PPOC	24- 94	23 3/4	-2 5/8	-9.9
O	BPANOON APPLIEO SYST	1- 1	1/2	+ 1/8	+33.3
O	CENTRAL OATA SYSTEMS	3- 9	4 1/4	0	0.0
O	COMPUTER OIMENSIONS	1- 5	1 3/4	- 1/8	-6.6
O	COMPUTER HORIZONS	1- 6	1 3/4	0	0.0
O	COMPUTER NETWORK	1- S	1 1/2	0	0.0
N	COMPUTER SCIENCES	2- 6	2 3/4	0	0.0
O	COMPUTER TASK GROUP	1- 2	1/2	0	0.0
O	COMPUTER TECHNOLOGY	1- 3	1/2	0	0.0
O	COMPUTER USAGE	3- 9	2 3/4	- 1/8	-4.3
O	COMPESS	1- 2	3/8	- 1/8	-2S.0
O	COMSHARE	2- 9	2 3/4	0	0.0
N	COROURA CORP	2- 15	2 1/2	- 1/4	-9.0
O	OATATAB	1- 4	1 1/2	- 1/2	-25.0
A	ELECT COMP PROG	1- 2	1/4	0	0.0
N	ELECTPONIC OATA SYS.	12- S6	14 1/4	-1	-6.S
O	INFONATIONAL INC	1- 2	1/2	0	0.0
O	I.O.A. DATA COPP	1- 1	3/8	0	0.0
O	IPS COMPUTER MARKET.	1- 5	3/4	0	0.0
O	KEANE ASSOCIATES	2- S	3 1/4	0	0.0
O	KEYOATA CORP	2- 12	2 1/8	- 3/4	-26.0
O	LOGICON	2- 7	3 1/8	0	0.0
A	MANAGEMENT OATA	1- S	1 S/8	+ 1/8	+8.3
O	NATIONAL CSS INC	14- 42	15	-1	-6.2
O	NATIONAL COMPUTER CO	1- 1	1/4	0	0.0
O	NATIONAL INFO SRVCS	1- 2	1/8	0	0.0
A	ON LINE SYSTEMS INC	12- 31	25	-2 1/2	-9.0
N	PLANNING RESEARCH	2- 7	2 1/2	0	0.0
O	PPOGRAMMING METHOOS	17- 2S	17	0	0.0
O	PROGRAMMING & SYS	1- 1	3/4	+ 1/8	+20.0
O	RAPIOATA INC	2- 24	2 S/8	0	0.0
O	SCIENTIFIC COMPUTERS	1- 3	3/4	- 1/8	-14.2
O	SIMPLICITY COMPUTER	1- 4	3/4	0	0.0
O	TCC INC	1- 1	1/4	0	0.0
O	TYMSHARE INC	6- 13	8 S/8	-1 1/4	-12.6
O	UNITEO OATA CENTER	3- 6	2 3/4	0	0.0
A	UPS SYSTEMS	2- 8	2 1/8	- 3/8	-15.0
N	WYLY CORP	3- 11	3	- 1/4	-7.6

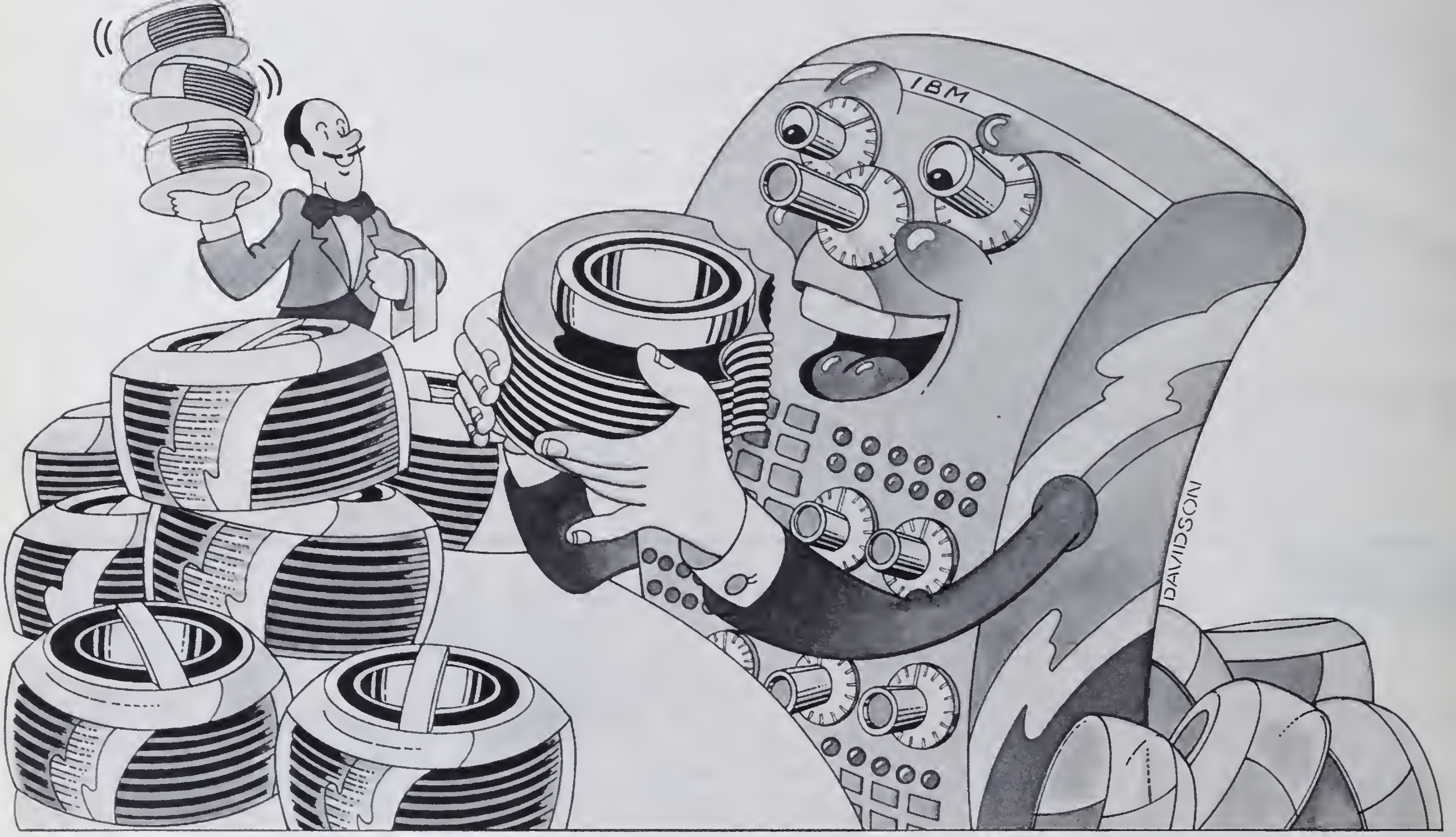
PERIPHERALS & SUBSYSTEMS

EXCH		PRICE 1973-74 RANGE (1)	CLOSE JULY 3 1974	WEEK NET CHNGE	WEEK PCT CHNGE
N	AOOPESSOGRAPH-MULT	S- 34	4 S/8	- 1/8	-2.6
O	AOVANCEO MEMOPY SYS	3- 23	3	- 1/4	-7.6
N	AMPEX CORP	3- 7	3	- 1/4	-7.6
O	ANOERSON JACOBSON	2- 6	2 1/2	- 1/4	-9.0
O	BEEHIVE MEOICAL ELEC	3- 10	3 1/4	- 1/4	-7.1
A	8OLT,BERANEK & NEW	6- 12	7	- 1/2	-6.6
N	BUNKER-RAMO	6- 18	S S/8	- 1/2	-8.1
A	CALCOMP	5- 16	7 3/8	- 7/8	-10.6
O	CAMBRIOGE MEMORIES	7- 17	7 1/4	- 3/8	-4.9
O	CENTRONICS OATA COMP	13- 38	15 1/4	- 3/4	-4.6
O	COOEX CORP	8- 19	11 1/4	- 3/4	-6.2
O	COGNITRONICS	1- 3	1 1/8	+ 1/8	+12.S
O	COMPUTER COMMUN.	1- 4	5/8	0	0.0
A	COMPUTER EQUIPMENT	1- 3	1 3/8	+ 1/8	+10.0
O	COMPUTER MACHINERY	3- 13	2 7/8	0	0.0
O	COMPUTER TRANSCEIVEP	1- 6	1 1/4	- 1/8	-9.0
N	CONRAC CORP	13- 32	14 1/8	-1 3/8	-8.8
O	OATA ACCESS SYSTEMS	1- 3	2 1/2	0	0.0
O	OATA 100	8- 19	7 3/4	-1 1/4	-13.8
A	OATA PRODUCTS CORP	2- 5	3 1/8	0	0.0
O	OATA RECOGNITION	1- 3	1/4	0	0.0
O	OATA TECHNOLOGY	1- 5	2 3/4	- 1/8	-4.3
O	OECISION OATA COMPUT	5- 40	S	-1 3/4	-2S.9
O	OELTA OATA SYSTEMS	1- 1	5/8	0	0.0
O	OI/AN CONTROLS	1- 4	1/2	- 1/4	-33.3
N	ELECTPONIC M & M	2- 6	2 1/8	- 1/8	-S.S
O	FABRI-TEK	2- S	1 7/8	- 1/8	-6.2
O	GENERAL COMPUTER SYS	2- 9	2 1/4	0	0.0
N	GENERAL ELECTRIC	47- 76	47 3/8	-1 1/4	-2.5
N	HAZELTINE CORP	4- 9	4 1/4	0	0.0
O	INFOREX INC	2- 23	2 7/8	+ 3/8	+1S.0
O	INFORMATION DISPLAYS	1- 2	1/4	- 1/8	-33.3
O	INFORMATION INTL INC	8- 1S	10	+ 1/4	+2.5
A	LUNDY ELECTRONICS	3- 9	2 7/8	0	0.0
O	MANAGEMENT ASSIST	1- 1	1/4	0	0.0
N	MEMOREX	2- 19	4	- 3/8	-8.5
A	MILGO ELECTRONICS	9- 28	10 3/4	- 1/8	-1.1
N	MOHAWK OATA SCI	2- 13	2 1/8	- 1/8	-S.S
O	OOEC COMPUTER SYST.	2- 6	1 1/2	- 1/4	-14.2
O	ORTICAL SCANNING	2- 8	3 1/2	-1	-22.2
O	PERTEC CORP	3- 8	2 5/8	- 1/2	-16.0
O	PHOTON	3- 7	3 3/4	0	0.0
A	POTTER INSTRUMENT	2- 9	2 3/4	0	0.0
O	PPECISION INST.	2- 6	1 1/4	0	0.0
O	QUANTOR CORP	4- 10	3 3/4	- 1/2	-11.7
O	RECOGNITION EQUIP	2- 8	3	+ 1/8	+4.3
N	SANDEPS ASSOCIATES	4- 18	3 S/8	- 1/8	-3.3
O	SCAN DATA	1- 6	1 1/4	- 1/4	-16.6
O	STORAGE TECHNOLOGY	10- 34	10 3/8	- 1/2	-4.5
O	SYCOP INC	7- 20	8	0	0.0
O	TALLY COPP.	2- 14	2 3/8	- 1/8	-S.0
O	TEC INC	4- 9	3 1/2	- 1/4	-6.6
N	TEKTRONIX INC	30- 5S	36 1/8	-3 7/8	-9.6
N	TELEX	3- 8	2 1/2	0	0.0
O	WANGCO INC	7- 13	7 S/8	- 1/2	-6.1
O	WILTEK INC	5- 18	4 1/2	- 1/2	-10.0

SUPPLIES & ACCESSORIES

EXCH		PRICE 1973-74 RANGE (1)	CLOSE JULY 3 1974	WEEK NET CHNGE	WEEK PCT CHNGE
O	8ALTIMORE 8US FORMS	4- 9	4	- 1/4	-S.8
A	BARRY WRIGHT	5- 13	4 7/8	- 1/8	-2.5
O	CYBERMATICS INC	1- 3	1 1/4	0	0.0
A	OATA OOCUMENTS	17- S4	48 1/2	-1 1/2	-3.0
O	OUPLEX PROOUCTS INC	6- 17	14 7/8	- 3/4	-4.7
N	ENNIS BUS. FOPMS	5- 8	5 7/8	- 3/8	-6.0
O	GRAHAM MAGNETICS	7- 20	6 3/4	- 3/4	-10.0
O	GRAPHIC CONTPOLS	7- 12	8 3/4	- 1/4	-2.7
N	3M COMPANY	69- 91	70 3/8	-3 1/4	-4.4
O	MOORE CORP LTO	48- 65	S0	0	0.0
N	NASHUA CORP	32- 58	37 3/4	-1 1/4	-3.2
O	REYNOLOS & REYNOLD	22- S1	22	-1	-4.3
O	STANDARO REGISTER	11- 20	14 3/4	0	0.0
O	TAB PPOOUCTS CO	6- 23	S 3/4	- 1/4	-4.1
N	UARCO	15- 23	20 1/4	- 3/8	-1.8
A	WABASH MAGNETICS	5- 8	5	0	0.0
N	WALLACE BUS FORMS	14- 26	20 1/2	- 1/4	-1.2

CIG's Block Multiplexer Channel: It gives your 360/65 a big appetite for data.



Just like the 370/168.

The IBM 370 model 168 has the most powerful I/O setup in the 370 series. There's no real reason why the 360/65 or 67 user shouldn't take advantage of it. So CIG built a Block Multiplexer Channel just like the IBM 2880. It plugs right into your 360 without any hardware or software changes.

Once you've got our Channel, you string any combination of 3330 disk drives, control units and switches behind it. Mix and match single density, double density, 3330 compatible from Ampex, Telex, CDC, Calcomp, STC, and Itel. We've tried them all. If it works on the 168, it now works on your 65. You can even share a common 3330 data base between your 360 and 370 systems.

CIG

CIG COMPUTER PRODUCTS, INC.

A Subsidiary of Computer Investors Group, Inc.

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Dear CIG:

☐ Send me all the info on the CIG 6780.

☐ Send details on CIG Add-on Memory for the 360/______, 370/______.

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Up to 8-times the thruput.

If you're still using 2314's or 3330's attached to a 2860 with modified software, you're in for a big surprise when you plug in our Channel. Because your 65 is going to start swallowing data exactly like a 370/168.

That means up to 8-times more thruput under heavy loads. (Who says so? IBM. Right in their Systems Research Journal. Write and ask us for a copy.)

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But what really makes your system turn on is RPS (Rotational Position Sensing). And IBM put full RPS and 3330 support in OS release 21.6 and beyond. So you don't have to change your software to use our hardware.

Have we got references!

Users who know the score have been running the CIG 6780 channel for months, and we're shipping more every day. So if you'd like to find out how our blue-chip customers — over a dozen of them — increase the appetites of their 65's and 67's with CIG's channel, write and we'll tell you who to call.

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If you really want a hungrier 65, plug in up to 4 megabytes of CIG high-speed Main Memory in combination with the CIG 6780 Channel. Then you'll have a system that'll digest more data than 370/155's or 158's. Especially those running VS.

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